REPORT OF INDUSTRIAL USER COMPLIANCE EVALUATION INSPECTION

AT

CHS, INC.
395 164th Street, PO Box 894, South Sioux City, Nebraska 68776

NPDES Permit Number: IA0043095 (Sioux City Iowa STP)

ON

January 11, 2017

BY THE

U.S. ENVIRONMENTAL PROTECTION AGENCY
Region VII
Environmental Sciences and Technology Division

INTRODUCTION

At the request of the Water, Wetlands, and Pesticides Division, Water Enforcement Branch, I conducted an Industrial User Compliance Evaluation Inspection at the CHS, Inc. industrial facility in South Sioux City, Nebraska, on January 11, 2017. The inspection was conducted under the authority of Section 308 of the Clean Water Act, as amended, and in accordance with EPA Region VII Standard Operating Procedures for Compliance Inspections (ENST SOP No. 2332). This narrative report and the attachments present the results of the inspection.

PARTICIPANTS

CHS, Inc.:
- Chris Oehler, Plant Manager
- Scott E Duncan, Environmental, Health, and Safety Coordinator
- Jeremy MacClure, Plant Engineer

City of Sioux City, Iowa:
- Desiree McCaslen, Pretreatment Manager

Nebraska Department of Environmental Quality:
- Curtis Christiansen, P.E.
- Terry Johnson, Program Specialist

U.S. Environmental Protection Agency (EPA) Region VII:
- Peter Green, Environmental Scientist
- Lantz Tipton, Environmental Scientist

FACILITY DESCRIPTION

The CHS facility is located in the Roth Industrial Park in South Sioux City (map/aerial-Attachment 1). The facility was built in 2008. It was owned and operated by Solbar (an Israeli company) from 2010 to 2012. The plant was acquired in 2012 by CHS, a Fortune 100 diversified energy, grains, and foods company owned by U.S. farmers, ranchers, and co-ops. The facility brings in defatted soy flakes by the truckload and produces protein powder which is shipped out in bags and totes. The process involves adding water and adjusting the pH to isolate the protein from the fiber and starch in several stages. Centrifuges are used to separate the protein solids from the liquid, consisting mostly of water and starch. Okara is a tofu-like byproduct of the production process consisting mostly of fiber and 86-88% moisture. It is loaded onto semi trucks on the south side of the building (photos 1-3) and sold to dairy farms. The protein product is pasteurized and dried, and the water is neutralized and discharged to the city sewer. Industrial wastewater is also generated through clean-in-place (CIP) processes, boiler blowdown, water softener backflush, and reverse osmosis reject water.

CHS has a wastewater pretreatment process consisting of a 30,000-gallon pH adjustment tank. The water in the tank is mixed and is circulated through a "kidney loop" (photo 4) at the base of the tank which contains a pH probe. The probe controls two pumps for injection of caustic and hydrochloric acid into the tank. It is monitored through a plant-wide SCADA (supervisory control and data acquisition) system. Attachment 8 is an example of a typical report generated from the data, consisting of hourly average pH readings. The wastewater is discharged from the pH adjustment tank to a gravity sewer leading to the Roth Lift Station. There is no pH probe on the effluent discharge. A grab sample is collected once a month (by the City of Sioux City, Iowa) to measure the pH. Sanitary wastewater from the plant is discharged to the same gravity line through a separate connection.

The pH adjustment system activates the caustic pump when the pH falls below 5.5 and turns it off at 6.0. The acid pump is triggered if the pH rises to 9.7, and turns off at 9.2. During production, CHS' process wastewater is generally acidic with a pH of 5 to 5.5. Production alternates approximately every four days with CIP operations, which take about 20 hours. The CIP process generates alkaline wastewater.

Historically, CHS' wastewater has been conveyed from the Roth Lift Station to the Bennet Lift Station, then pumped under the Missouri River to the Sioux City Sewage Treatment Plant (STP). The route taken is shown in a map in Attachment 1: a force main carried it east from the Roth Lift Station to a gravity sewer that runs north along C Avenue. The C Avenue line discharged to a larger gravity line running east along 39th Street and then north along Bennet Avenue to the Bennet Lift Station. The industry has been charged user fees by the City of South Sioux City, Nebraska, who in turn payed the City of Sioux City, Iowa, to treat the wastewater. They also paid Sioux City, Iowa, to conduct effluent monitoring of the industrial users in South Sioux City.

When Big Ox Energy (BOE) came on line in September 2016, the City diverted the wastewater from CHS to the BOE facility. Industrial wastewater from two other industries in the Roth Industrial Park (Beef Products Inc., or BPI, a sausage manufacturer, and Richardson Milling, Inc., or RMI, which produces granola) has also been diverted to BOE. They are combined at the BPI lift station and pumped to BOE. BOE uses these high-BOD wastestreams, along with liquid wastes trucked in from other industries, to feed anaerobic digesters, and produces methane for sale to an interstate pipeline. The wastewater from CHS, BPI, and RMI is treated through a dissolved air flotation (DAF) system. The floated solids are fed into BOE's anaerobic digesters, and the DAF effluent is discharged back into the South Sioux City collection system. A lift station at BOE pumps the effluent by force main to the C Avenue gravity sewer.

With this new arrangement, the City of South Sioux City pays BOE to accept and treat the industrial wastewater from CHS, BPI, and RMI. BOE is guaranteed a minimum monthly rate, which will increase over time). BOE pays the City of Sioux City, Iowa, to accept and treat their pretreated effluent.

Attachment 2 contains billing statements from the City of Sioux City for 2016. Sioux City uses a two-tiered fee schedule to calculate user charges. Industrial users pay $2.397 per thousand gallons to discharge domestic-strength wastewater; i.e., with concentrations at or below 300 mg/L of TSS, 250 mg/L of BOD, and 100 mg/L of FOG. Pollutant discharges in excess of domestic concentrations are charged at the rate of $0.098 per pound of TSS, $0.239 per pound of BOD, and $0.165 per pound of FOG. A higher, second tier rate is applied to pollutant loads exceeding the concentration thresholds 1200 mg/L of TSS, 2000 mg/L of BOD, or 400 mg/L FOG. These rates are: $0.196 per pound of TSS, $0.478 per pound of BOD, and $0.33 per pound of FOG. The same rates apply to wastewater now being discharged from the BOE facility. South Sioux City, on the other hand, has a one-tier user charge schedule. The City charges $2.86 per thousand gallons, and pollutant loads exceeding domestic concentration levels are charged $0.12 per pound of TSS, $0.239 per pound of BOD, and $0.22 per pound of FOG. For 2016, CHS paid more than $2 million in user charges. Since BOE began taking wastewater from the three industries (CHS, BPI, and RMI) in September, CHS contributed 35% of the hydraulic loading, 78% of the BOD, and 71% of the TSS.

CHS has a flow-proportioning refrigerated composite sampler located at their wastewater discharge pit. The samples are picked up by Ms. McCaslen and analyzed (including pH) at the Sioux City STP laboratory.

INSPECTION PROCEDURES

On Wednesday, January 11, Mr. Tipton and I met Messrs. Christiansen and Johnson at the CHS industrial facility. I called Mr. MacClure on the phone in the reception area. He arrived to greet us several minutes later, with Messrs. Oehler and Duncan. We introduced ourselves, presented our credentials, and explained the purpose and scope of the inspection. After signing the visitors' log, we assembled in a conference room, where we discussed the plant processes and wastewater discharge. I completed the Multimedia Screening Checklist (Attachment 3), and briefly reviewed the facility's Storm Water Pollution Prevention Plan (SWPPP). We were then escorted on a walk-through inspection of the production areas, wastewater pretreatment and monitoring equipment, and outdoor loading areas. We returned to the conference room, where we discussed my preliminary inspection observations, and I requested additional information about recent effluent pH monitoring data. The following week, I received an email from Mr. Oehler (Attachment 4) with the recent pH data I had requested.

During the week, we also inspected the Big Ox Energy industrial facility, where CHS' wastewater is currently being sent for pretreatment. Ms. McCaslen provided flow, effluent, and billing information for the CHS facility (Attachment 2). She also forwarded several emails from CHS in late January reporting several discharges of slug loads and noncompliant pH levels (Attachment 5).

FINDINGS AND OBSERVATIONS

Attachment 6 contains photographs taken during the inspection. Attachment 3 is a completed Multimedia Screening Checklist completed for the facility.

1. **Pretreatment Permit**: CHS has a pretreatment permit (Attachment 7) issued by the City of Sioux

City, Iowa, on April 14, 2014. It expires on April 14, 2017, and will not be renewed since the facility's wastewater is now being treated at the BOE facility. The permits were issued with effluent limits for pH (5.0 – 11.5) and TSS (700 pounds/day). For pH, only a single monthly measurement is required. The TSS limitations were waived in April 2015. Ms. McCaslen explained that this was allowed because the Sioux City STP receives less than 80% of its treatment capacity for TSS. For industrial users discharging more than 25,000 gallons per day (gpd), Sioux City collects weekly composite samples for BOD5, TSS, total nitrogen (TN) and total phosphorus (TP), and weekly grab samples for fats, oils, and grease (FOG). At CHS, effluent samples are collected for BOD nearly every day. A refrigerated flow-proportioning automatic composite sampler (photo 5) is used to collect effluent samples.

The City of South Sioux City is drafting new ordinances and pretreatment permits to regulate their significant industrial users after their current (Sioux City, Iowa) pretreatment permits expire. CHS is already subject to South Sioux City's existing sewer use ordinance, which has more stringent pH limits than their pretreatment permit: a minimum of 5.0 and a maximum of 9.5.

2. Compliance History; pH: A monthly grab sample is collected by the Sioux City pretreatment program staff for pH measurement. Ms. McCaslen's records indicated that every monthly sample collected since 2012 has been within the permitted range of 5.0 – 11.5.

However, the plant engineer at BOE (Jason Osbahr) told us that on a number of occasions (including last week), industrial wastewater with very low pH levels had been received at the BOE facility. He said that the first time was shortly after the initial startup on September 2. The influent pH was observed to drop from around 8 to 3.9 in a few hours, and it happened again the following weekend. He suspected that one of the industries had been discharging wastewater with a pH as low as 2. The low pH, he believed, set off a chain of events that upset the DAF and/or digesters and led to elevated H2S levels and odor problems in South Sioux City's gravity collection system. The BOE plant was eventually shut down in early November. CHS was suspected to be the source of these acid slugs, since the other major industry, BPI, has extremely tight control over their effluent pH, and RMI contributes less than 1% of BOE's incoming wastewater. Between the discharge pit at CHS and the wastewater equalization tank at the BOE facility, there are no monitoring ports or probes. By the time CHS' wastewater reaches the pH probe in BOE's DAF equalization tank, they have a limited ability to adjust the pH. Sodium bicarbonate can be added to the equalization tank if the pH is too low. If the pH is *extremely* low, it may be necessary to move a crane into the area in order to handle the large amounts of bicarbonate required. Wastewater received at the BOE facility is treated through a DAF system. If the pH is below 5.0, the DAF automatically shuts down. When the capacity of the DAF equalization tank (300,000 gallons) is exceeded, the wastewater begins to overflow to the effluent discharge pit. BOE has no neutralization system for their effluent wastewater, so low-pH wastewater bypassing the DAF can be discharged to the City sewer.

Even though pH of CHS' effluent is measured by Ms. McCaslen only once a month, there is continuous monitoring of the pH in the kidney loop which is used to control the pH adjustment system. Mr. MacClure said that he could provide pH data which was aggregated by the hour. He said that more detailed data could be retrieved, if necessary, but it would be more difficult and time-consuming to provide. I requested that he send me the hourly data for December, when the last pH excursion was reported. The following week, I received a copy of the hourly pH records for December and January, through Jan. 12, 2017 (Attachment 8). The recorded pH values ranged from 2.04 to 12.53. There were 19 days when pH values were reported outside the 5.0 – 9.5 range, listed below:

Day	Hours < 5.0	Minimum pH	Hours > 9.5	Maximum pH
Dec. 2	2	2.04		
Dec. 3	6	2.54		
Dec. 4	2	3.58		
Dec. 5	8	2.64		
Dec. 6	5	3.65		
Dec. 7	3	2.05	2	12.68
Dec. 10	3	3.96		
Dec. 11	13	2.04		
Dec. 12	4	4.68	1	9.57
Dec. 13			5	12.10
Dec. 17			4	12.03
Dec. 18			24	12.13
Dec. 19			8	11.01
Dec. 20			2	10.59
Dec. 22			6	12.53
Dec. 26			1	9.57
Jan. 2			1	9.69
Jan. 3			3	10.03
Jan. 7			1	10.41
Jan. 29			13	12.56

The effluent pH was outside the permitted range for 104 of 1032 hours (i.e., 10% of the time). Hourly flows during this time ranged from 20 gallons to 24,738 gallons (0.0005 to 0.6 MGD).

Mr. MacClure attributed the pH excursions in December to a problem with the kidney loop on the neutralization system. The wastewater in the loop had frozen solid, preventing the water from flowing past the pH probe. To remedy this, insulation has been installed around the pipe (photo 4).

The cause of the high pH wastewaters in mid-December through early January was not discussed since I was not aware of these excursions until I received these records after the inspection. Ms. McCaslen also forwarded to me a report she received from CHS on January 29. They reported that their hydrochloric acid pump had failed that day and high pH wastewater was discharged for 13 hours.

Even though Sioux City's monthly effluent pH measurements have not detected any violations since 2012, the hourly data provided by CHS for December and January paint a different picture, with frequent excursions outside the permitted pH range. And since these data are hourly averages, they smooth out any shorter-term fluctuations and may under-report the number and magnitude of pH swings.

It should also be noted that the data above are *hourly arithmetic averages* of individual pH measurements. Since averaging smooths out the data, short-term fluctuations may not be noticed. Also, it is not appropriate to average pH data, since a pH value is not a linear measure of concentration. An arithmetic average of pH measurements is not a meaningful number. This can be illustrated by considering what happens when two equal volumes of wastewater are mixed together. pH is defined as the negative $\log_{10}$ of the molar hydronium ion concentration. If the initial pH values are, say, 5 and 9, this indicates hydronium ion concentrations of 0.00001 and 0.000000001 moles/liter, respectively.

Mixing the two solutions together produces a solution with a hydronium ion concentration of 0.0000050005, which is the *arithmetic average* of the two initial concentrations. The pH, accordingly, would be: $-\log_{10}(0.0000050005) = 5.3$. This is significantly lower than 7, the arithmetic average of 5 and 9. No matter what the pH of the initial solutions are, in fact, the actual pH would be lower than the arithmetic average of the initial two pH values. Therefore, it seems very likely that additional excursions below the lower pH limit of 5.0 probably occurred but are not reflected in this table of "average" pH readings.

According to Mr. MacClure, the 30,000-gallon neutralization tank is run continuously and is maintained at about 1/3 full. At the average discharge rate of ~400,000 gallons per day (or ~278 gpm), this would indicate a detention time of approximately 36 minutes in the neutralization tank, on average. The pH adjustment process is a dynamic one, with the caustic or acid pumps "chasing" the wastewater pH to try to stay within the prescribed range. During normal production, the tank is continuously discharging and the actual pH of the water being discharged is not measured.

If the wastewater equalization basin is filled to capacity, it overflows directly to the sewer, bypassing the neutralization system altogether. This does happen occasionally, but generally only for a minute or two. The data in Attachment 8 show five days in December when significant bypasses occurred, and one day in January (December 4, 13, 14, 19, & 28, and January 7). The longest duration bypass was 46 minutes. Mr. MacClure said that CHS is considering adding a backup pump to prevent overflows if a pump goes down.

We discussed the operators' supervisory control over the pH neutralization system. The pH probe reports through the plant-wide SCADA (supervisory control and data acquisition) system when the pH is outside the range of 5.5 to 9.7, which activates the pumps to inject caustic or hydrochloric acid. There is no alarm to alert plant personnel when the pH is high or low. Mr. MacClure said that there are multiple operators monitoring the SCADA panels around the clock, who would notice the status of the effluent discharge. Nevertheless, as noted above, pH excursions appear to occur frequently, and the actual frequency cannot be accurately discerned from the average values currently being reported.

Any discharge outside the range of 5.0 - 9.5 is a violation of the sewer use ordinance, which is intended to protect the collection system from corrosion. High or low pH wastewater can also adversely impact the wastewater treatment processes at the BOE facility. Mr. Osbahr said that BOE is looking into the feasibility of installing a dosing tank at the point where wastewater enters the BOE plant, with a pH probe and caustic feed.

Recommendations: Complete loss of pH control has occurred on multiple occasions due to pump or pH probe failures which were not corrected for days. The pH of wastewater discharged from the CHS facility is not adequately monitored *or* controlled anywhere between the CHS facility and the DAF equalization tank inside the BOE facility. This subjects the collection system to potential corrosion and BOE's processes to pass-through and/or interference. Between CHS and BOE, there must be an agreement about how to better monitor and/or control the pH of this wastewater. The City of South Sioux City should also be involved in these deliberations, since the transport of corrosive wastewaters can impact their collection system and violate the sewer use ordinance.

CHS should upgrade its pretreatment system to provide better effluent pH control. It is recommended that a pH probe be installed at the point where the effluent discharges to the sewer, and that an alarm be installed to alert operators immediately if the pH is outside of the control range. Redundant systems should be installed, or alternatively, a holding tank should be provided to contain wastewater while

diagnostics and repairs are conducted. A larger neutralization tank and/or kidney loop system are other upgrade options which would enhance pH control. A back-up pump should be provided for the neutralization system.

3. Compliance History; Suspended Solids: The pretreatment limit for TSS (700 ppd) was dropped from the permit in April 2015. Ms. McCaslen told us that the previous plant owner (Solbar USA) had been placed on a compliance schedule to reduce their discharges of solids. The compliance schedule was transferred to CHS when they took ownership of the plant.

Based on billing information provided by the City of Sioux City, I computed the average effluent volumes, BOD and TSS concentrations for CHS' discharges over the last 12 months. I also calculated these for the last 4 months since CHS began discharging to the BOE facility:

	BOD_{avg}		$TSS_{avg.}$		$Flow_{avg}$
Timespan	(mg/L)	*(pounds/day)*	(mg/L)	*(pounds/day)*	(MGD)
all of 2016*	5,159	*19,201*	1,867	*6,895*	0.442
September-December	4,412	*14,608*	1,552	*5,139*	0.397

(*2016 averages based on 291 days of operation)

Whenever a tank is dumped or any type of slug load is discharged from the CHS facility, they are required to notify the City. Since September, the reports have also been sent to BOE. Ms. McCaslen forwarded to me nine emails she received from CHS since last August (Attachment 5), reporting slug loads or releases of noncompliant wastewater. Eight of the nine events were tank dumps, resulting in slug loads of about 900 pounds of solids, on average, being discharged to the sewer. Although this represents only about 12% of the amount of solids typically discharged every day, the discharge of concentrated slugs of BOD or TSS can upset biological treatment systems.

Date	Volume	Parameter	Cause
Aug. 18	~105 G	~14% solids	"process upset"
Aug. 19	900 G	17% solids	"process upset"
"	900 G	17% solids	"process upset"
Aug. 30	850 G	17.6% solids	dumped to drain
Oct. 2	~2400 G	3% solids	went to drain
"	960 G	8% solids	"
?	990 G	16% solids	"issue with PAS-6300"
Jan. 29	~104,000 G	high pH	"issue with HCl pump"
Feb. 3	476 G	~15.5% solids	off-spec product dumped

Recommendation: CHS should always notify the City and BOE facility in advance before dumping any concentrated wastewater to the sewer. They should also consider installing a holding tank with enough capacity to hold such wastes and discharge them slowly in order to prevent slug loading of BOE's treatment processes.

4. Storm Water: I briefly reviewed CHS' Storm Water Pollution Prevention Plan (SWPPP) and associated records. These included quarterly visual monitoring records, inspection records, and storm water monitoring, which appeared thorough and complete. We also inspected the plant grounds, outdoor tanks, and okara loadout area. In the loadout area, we observed minor amounts of the material on the pavement next to the semi-trucks. Mr. Duncan said that the best management practice (BMP) outlined in the SWPPP for this area was to scrape and sweep any spillage from the area after the truck is

loaded or at the end of a shift. He also pointed out a camera on the side of the building (photo 3) used by staff to monitor the loadout process from inside the building.

CONCLUSIONS

1. The pretreatment permit for CHS, Inc., issued by the City of Sioux City, Iowa, expires on April 14, 2017, and will not be renewed. It limits CHS' effluent pH to between 5.0 and 11.5. South Sioux City's sewer use ordinance has more stringent limits (5.0 – 9.5). Sioux City's monthly measurements of CHS' effluent have remained within this range since 2012. However, hourly pH data for December and January, provided by the facility, indicate that the industry's wastewater pH was above or below the required range 10% of the time.

2. During an inspection of the Big Ox Energy facility, we were told that very acidic industrial wastewater has been received at their facility on numerous occasions since they began accepting wastewater, possibly contributing to an upset at that facility and excessive levels of hydrogen sulfide in the City's collection system.

3. The data and information provided indicate that CHS' wastewater neutralization system is not adequate to continuously maintain their wastewater discharge within the range of pH required under their existing pretreatment permit or sewer use ordinance, or any new permit limits or sewer use ordinance likely to be issued. CHS should upgrade their wastewater pretreatment system to ensure adequate treatment. For example:

- Redundant systems should be installed to ensure that pH control can be maintained in the event of equipment failure; e.g., failure of a pump or pH probe.
- A pH probe should be installed at the actual discharge point to monitor effluent pH.
- An alarm system should be installed to alert operators if the effluent pH drifts outside the permitted range.
- Installation of a holding tank should be considered, to divert and contain wastewater that does not comply with effluent pH limits.
- CHS should consider increasing the capacity of the existing neutralization system to provide greater retention times and a greater margin of safety.

4. Since September 2016, CHS' wastewater has been routed through the Big Ox Energy facility. The City of South Sioux City is reportedly developing a new ordinance and/or pretreatment permitting program to regulate CHS' wastewater discharge when their current pretreatment expires. Some issues to be resolved include confidentiality agreements and the loading capacity of the BOE facility. The BOE facility is also considering options to increase their control over the pH of incoming wastewater. The three entities should work together to ensure that measures are in place to protect the collection system and the BOE facility from corrosive and/or other problematic wastewater discharges.

5. CHS frequently (e.g., on eight occasions over the last six months) dumps the contents of process tanks to the sewer. The discharge of concentrated slugs of BOD and/or TSS can adversely impact downstream biological treatment plant processes. Although they report these after-the-fact to BOE and Sioux City (the current permit authority), tank dumps should be avoided as a routine practice. When

possible, BOE and the City should be consulted before dumping concentrated wastes. CHS should also consider installing a tank to hold concentrated wastes so that they can be bled in gradually with other wastewater discharged.

Peter M. Green
Environmental Scientist
Activity Number: WGP425
Date: March 10, 2017

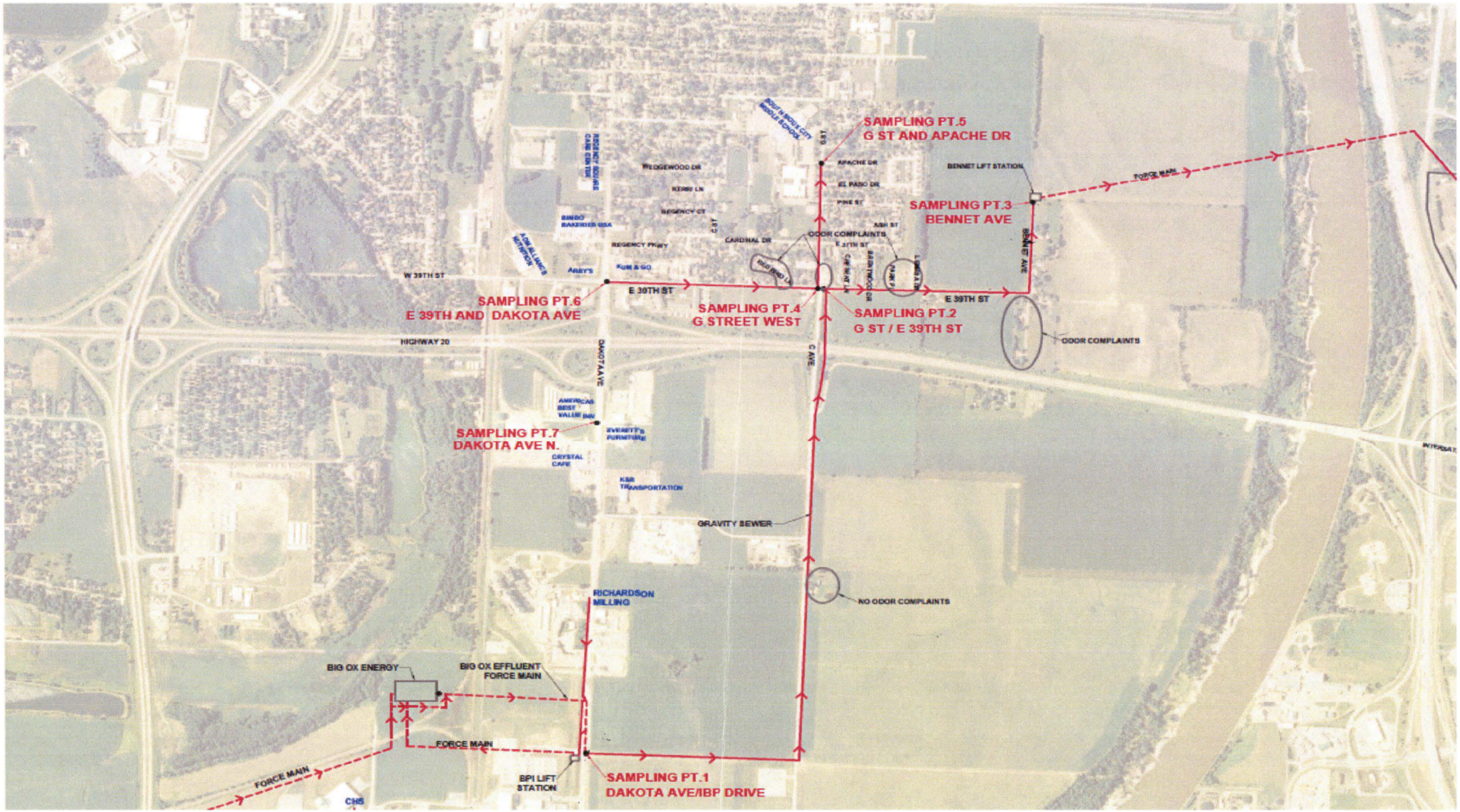
Attachments:

1. Aerial photos/maps of Roth Industrial Park, Sewer Route, and CHS Facility (4 pages)
2. 2016 Sewer Billing Statements for CHS Facility (City of Sioux City, Iowa) (16 pages)
3. Multi-Media Screening Checklist (2 pages)
4. Jan. 16, 2017, Email from Mr. Oehler, with Additional Information Requested during Inspection (8 pages)
5. Email Correspondence Forwarded from Ms. McCaslen, City of Sioux City, Iowa, Including Slug Loading Reports Received from CHS; August 2016 through January 2017 (15 pages)
6. Digital Photos Taken during Inspection (5 photos, 6 pages)
7. CHS' Pretreatment Permit (City of Sioux City, Iowa) issued April 14, 2014 (9 pages)
8. CHS' Hourly Effluent pH Data; December 2016 and January 2017 (28 pages)

ATTACHMENT 1a

ATTACHMENT 1b

ATTACHMENT 1 C




ROTH LIFT STATION
164TH ST
Bpl

ATTACHMENT 2

Sioux City, Iowa WWTP
Industrial Billing

CHS
395 164th St.
South Sioux City, NE 68776

Account # **83646-1014018**

Date Sampled	Flow Daily mgd	S.S. Conc mg/l	S.S. Daily lbs/d	Grease Conc mg/l	Grease Daily lbs/d	B.O.D. Conc mg/l	B.O.D. Daily lbs/d	Nitrate Conc mg/l	Nitrate Daily lbs/d	Surcharge lbs/d	pH	Limits Exceeded
1/1/2016	0.323		0		0	4983	13423		0	0		
1/2/2016	0.323		0		0	3700	9967		0	0		
1/3/2016	0.323		0		0	860	2317		0	0		
1/4/2016	0.323		0		0	6513	17545		0	0		
1/5/2016	0.323		0		0	6339	17076		0	0		
1/6/2016	0.323	1680	4526	31	84	4000	10775		0	0		
1/7/2016	0.323		0		0		0		0	0		
1/8/2016	0.323		0		0		0		0	0		
1/9/2016	0.380		0		0		0		0	0		
1/10/2016	0.380		0		0		0		0	0		
1/11/2016	0.380		0		0	4766	15104		0	0		
1/12/2016	0.380	348	1103	27	86	1660	5261		0	0		
1/13/2016	0.334	3033	8449	53	148	7938	22112		0	0		
1/14/2016	0.334	1729	4816	5253	14633	9420	26240		0	0		
1/15/2016	0.334		0		0	7964	22184		0	0		
1/16/2016	0.402		0		0	3256	10916		0	0		
1/17/2016	0.402		0		0	6525	21876		0	0		
1/18/2016	0.402		0		0	7674	25728		0	0		
1/19/2016	0.402		0		0	8860	29705		0	0		
1/20/2016	0.363	3240	9809	63	191	5426	16427		0	0		
1/21/2016	0.363		0		0	83	251		0	0		
1/22/2016	0.363		0		0	6505	19693		0	0		
1/23/2016	0.333		0		0	6766	18791		0	0		
1/24/2016	0.333	2310	6415		0	7857	21821		0	0		
1/25/2016	0.333		0		0	833	2313		0	0		
1/26/2016	0.333		0		0	6621	18388		0	0		
1/27/2016	0.506		0		0	7831	33047		0	0		
1/28/2016	0.506		0		0	7759	32743		0	0		
1/29/2016	0.506		0		0		0		0	0		
1/30/2016	0.399		0		0		0		0	0		
1/31/2016	0.399		0		0		0		0	0		
Total	11.451	2057		1085		5589			0	0		

Adjusted
Calculations

Average Sampled Flow	Conc. (mg/L)	Pounds	(MGD)	Monthly Avg.
Flow			11.451	0.369
TSS	2057	196414		6336
O&G	1085	103657		3344
BOD	5589	533769		17218

Threshold Values	Tier 1	Tier 2
TSS (mg/L)	300	1200
O&G (mg/L)	100	400
BOD (mg/L)	250	2000

Extra Strength Unit Costs	Tier 1	Tier 2
TSS ($/pound)	0.098	0.196
O&G ($/pound)	0.165	0.33
BOD ($/pound)	0.239	0.478

Actual Costs

Total Monthly Flow			**Monthly Permit Fee**	**$500.00**	**TSS Permit Limit**	**Monthly Avg.** 700 lbs
(1000 gallons)	($/1000 gal)	Total	**Monthly Sampline and Analysis Fee**	**$468.00**		
11451	$2.397		**Additional Sampling**			

Extra Strength

	Domestic Strength		Tier 1 (T1)			Tier 2 (T2)			Total Strength		
	Pounds	Charge ($/lbs)	Pounds	unit cost	T1 Charge	pounds	unit cost	T2 Charge	Charge		
TSS	28650	$0.00	85951	$0.098	$8,423.22	81813	0.196	$16,035.31	$24,458.53		
O&G	9550	$0.00	28650	$0.165	$4,727.32	65457	0.33	$21,600.68	$26,328.00		
BOD	23875	$0.00	167127	$0.239	$39,943.44	342766	0.359	$123,053.08	$162,996.52	Total	$214,751.05
		$0.00			$53,093.97			**$160,689.08**	**$213,783.05**	Tax	
										Total	$214,751.05

Sioux City, Iowa WWTP
Industrial Billing

CHS
395 164th St.
South Sioux City, NE 68776

Account # 83646-1014018

Date Sampled	Flow Daily mgd	S.S. Conc mg/l	Daily lbs/d	Grease Conc mg/l	Daily lbs/d	B.O.D. Conc mg/l	Daily lbs/d	Nitrate Conc mg/l	Daily lbs/d	Surcharge lbs/d	pH	Limits Exceeded
1/1/2016	0.323		0		0	4983	13423		0	0		
1/2/2016	0.323		0		0	3700	9967		0	0		
1/3/2016	0.323		0		0	860	2317		0	0		
1/4/2016	0.323		0		0	6513	17545		0	0		
1/5/2016	0.323		0		0	6339	17076		0	0		
1/6/2016	0.323	1680	4526	31	84	4000	10775		0	0		
1/7/2016	0.323		0		0		0		0	0		
1/8/2016	0.323		0		0		0		0	0		
1/9/2016	0.380		0		0		0		0	0		
1/10/2016	0.380		0		0		0		0	0		
1/11/2016	0.380		0		0	4766	15104		0	0		
1/12/2016	0.380	348	1103	27	86	1660	5261		0	0		
1/13/2016	0.334	3033	8449	53	148	7938	22112		0	0		
1/14/2016	0.334	1729	4816	876	2439	9420	26240		0	0		
1/15/2016	0.334		0		0	7964	22184		0	0		
1/16/2016	0.402		0		0	3256	10916		0	0		
1/17/2016	0.402		0		0	6525	21876		0	0		
1/18/2016	0.402		0		0	7674	25726		0	0		
1/19/2016	0.402		0		0	8860	29706		0	0		
1/20/2016	0.363	3240	9809	63	191	5426	16427		0	0		
1/21/2016	0.363		0		0	83	251		0	0		
1/22/2016	0.363		0		0	6505	19693		0	0		
1/23/2016	0.333		0		0	6766	18791		0	0		
1/24/2016	0.333	2310	6415		0	7857	21821		0	0		
1/25/2016	0.333		0		0	833	2313		0	0		
1/26/2016	0.333		0		0	6621	18388		0	0		
1/27/2016	0.506		0		0	7831	33047		0	0		
1/28/2016	0.506		0		0	7759	32743		0	0		
1/29/2016	0.506		0		0		0		0	0		
1/30/2016	0.399		0		0		0		0	0		
1/31/2016	0.399		0		0		0		0	0		
Total	11.451	2057		210		5589			0	0		

Adjusted Calculations

Average Sampled Flow

	Conc. (mg/L)	Pounds	(MGD)
Flow			11.451
TSS	2057	196414	
O&G	210	20046	
BOD	5589	533769	

Monthly Avg.
0.369
6336
647
17218

Threshold Values

	Tier 1	Tier 2
TSS (mg/L)	300	1200
O&G (mg/L)	100	400
BOD (mg/L)	250	2000

Extra Strength Unit Costs

	Tier 1	Tier 2
TSS ($/pound)	0.098	0.196
O&G ($/pound)	0.165	0.33
BOD ($/pound)	0.239	0.478

Actual Costs

Total Monthly Flow (1000 gallons)	($/1000 gal)	Total
11451	$2.397	

Monthly Permit Fee	**$500.00**
Monthly Sampline and Analysis Fee	**$468.00**
Additional Sampling	

	Monthly Avg.
TSS Permit Limit	700 lbs

Extra Strength

	Domestic Strength Pounds	Charge ($/lbs)	Tier 1 (T1) Pounds	unit cost	T1 Charge	Tier 2 (T2) pounds	unit cost	T2 Charge	Total Strength Charge
TSS	28650	$0.00	85951	$0.098	$8,423.22	81813	0.196	$16,035.31	$24,458.53
O&G	9550	$0.00	10496	$0.165	$1,731.77	0	0.33	$0.00	$1,731.77
BOD	23875	$0.00	167127	$0.239	$39,943.44	342766	0.478	$163,842.27	$203,785.70
		$0.00			**$50,098.43**			**$179,877.58**	**$229,976.00**

Total	$230,944.00
Tax	
Total	$230,944.00

Sioux City, Iowa WWTP
Industrial Billing

CHS
395 164th St.
South Sioux City, NE 68776

Account # 83646-1014018

Date Sampled	Flow Daily mgd	S.S. Conc mg/l	S.S. Daily lbs/d	Grease Conc mg/l	Grease Daily lbs/d	B.O.D. Conc mg/l	B.O.D. Daily lbs/d	Nitrate Conc mg/l	Nitrate Daily lbs/d	Surcharge lbs/d	pH	Limits Exceeded
1/1/2016	0.323		0		0	4983	13423		0	0		
1/2/2016	0.323		0		0	3700	9967		0	0		
1/3/2016	0.323		0		0	860	2317		0	0		
1/4/2016	0.323		0		0	6513	17545		0	0		
1/5/2016	0.323		0		0	6339	17076		0	0		
1/6/2016	0.323	1680	4526	31	84	4000	10775		0	0		
1/7/2016	0.323		0		0		0		0	0		
1/8/2016	0.323		0		0		0		0	0		
1/9/2016	0.380		0		0		0		0	0		
1/10/2016	0.380		0		0		0		0	0		
1/11/2016	0.380		0		0	4766	15104		0	0		
1/12/2016	0.380	348	1103	27	86	1660	5261		0	0		
1/13/2016	0.334	3033	8449	53	148	7938	22112		0	0		
1/14/2016	0.334	1729	4816	5253	14633	9420	26240		0	0		
1/15/2016	0.334		0		0	7964	22184		0	0		
1/16/2016	0.402		0		0	3256	10916		0	0		
1/17/2016	0.402		0		0	6525	21878		0	0		
1/18/2016	0.402		0		0	7674	25728		0	0		
1/19/2016	0.402		0		0	8860	29706		0	0		
1/20/2016	0.363	3240	9809	63	191	5426	16427		0	0		
1/21/2016	0.363		0		0	83	251		0	0		
1/22/2016	0.363		0		0	6505	19693		0	0		
1/23/2016	0.333		0		0	6766	18791		0	0		
1/24/2016	0.333	2310	6415		0	7857	21821		0	0		
1/25/2016	0.333		0		0	833	2313		0	0		
1/26/2016	0.333		0		0	6621	18388		0	0		
1/27/2016	0.506		0		0	7831	33047		0	0		
1/28/2016	0.506		0		0	7759	32743		0	0		
1/29/2016	0.506		0		0		0		0	0		
1/30/2016	0.399		0		0		0		0	0		
1/31/2016	0.399		0		0		0		0	0		
Total	11.451	2057		1085		5589			0	0		

Adjusted Calculations

Average Sampled Flow	Conc. (mg/L)	Pounds	(MGD)	Monthly Avg.
Flow			11.451	0.369
TSS	2057	196414		6336
O&G	1085	103657		3344
BOD	5589	533769		17218

Threshold Values	Tier 1	Tier 2
TSS (mg/L)	300	1200
O&G (mg/L)	100	400
BOD (mg/L)	250	2000

Extra Strength Unit Costs	Tier 1	Tier 2
TSS ($/pound)	0.098	0.196
O&G ($/pound)	0.165	0.33
BOD ($/pound)	0.239	0.478

Actual Costs

Total Monthly Flow (1000 gallons)	($/1000 gal)	Total
11451	$2.397	

Monthly Permit Fee	**$500.00**
Monthly Sampline and Analysis Fee	**$468.00**
Additional Sampling	

	Monthly Avg.
TSS Permit Limit	700 lbs

Extra Strength

	Domestic Strength Pounds	Domestic Strength Charge ($/lbs)	Tier 1 (T1) Pounds	Tier 1 (T1) unit cost	Tier 1 (T1) T1 Charge	Tier 2 (T2) pounds	Tier 2 (T2) unit cost	Tier 2 (T2) T2 Charge	Total Strength Charge
TSS	28650	$0.00	85951	$0.098	$8,423.22	81813	0.196	$16,035.31	$24,458.53
O&G	9550	$0.00	28650	$0.165	$4,727.32	65457	0.33	$21,600.68	$26,328.00
BOD	23875	$0.00	167127	$0.239	$39,943.44	342766	0.478	$163,842.27	$203,785.70
		$0.00			**$53,093.97**			**$201,478.26**	**$254,572.23**

Total	$255,540.23
Tax	
Total	$255,540.23

Sioux City, Iowa WWTP
Industrial Billing

CHS
395 164th St.
South Sioux City, NE 68776

Account # **83646-1014018**

Date Sampled	Flow Daily mgd	S.S. Conc mg/l	Daily lbs/d	Grease Conc mg/l	Daily lbs/d	B.O.D. Conc mg/l	Daily lbs/d	Nitrate Conc mg/l	Daily lbs/d	Surcharge lbs/d	pH	Limits Exceeded
2/1/2016	0.399	1840	6123		0	9424	31380		0	0		
2/2/2016	0.399	860	2862		0	1582	5264		0	0		
2/3/2016	0.399	2267	7543		0	4062	13517		0	0		
2/4/2016	0.399	3500	11647	48	160	7466	24844		0	0		
2/5/2016	0.399	2517	8375		0	8535	28402		0	0		
2/6/2016	0.622	2033	10548		0	7572	39280		0	0		
2/7/2016	0.622	1190	6173		0	2482	12875		0	0		
2/8/2016	0.622	1283	6657		0	3212	16662		0	0		
2/9/2016	0.622	2467	12798		0	7029	36463		0	0		
2/10/2016	0.143	2583	3081	10	12	7442	8875		0	0		
2/11/2016	0.143	773	922		0	1682	2006		0	0		
2/12/2016	0.143	2017	2405		0	4025	4800		0	0		
2/13/2016	0.523	3350	14612		0	8692	37913		0	0		
2/14/2016	0.523	2033	8869		0	8396	36622		0	0		
2/15/2016	0.523	3517	15339	7	31	9130	39823		0	0		
2/16/2016	0.523	1360	5932		0	2769	12078		0	0		
2/17/2016	0.415	2433	8429		0	3534	12242		0	0		
2/18/2016	0.415	3817	13210		0	11182	38702		0	0		
2/19/2016	0.415	1933	6691		0	8944	30956		0	0		
2/20/2016	0.424	2183	7721		0	9774	34562		0	0		
2/21/2016	0.424	1150	4067		0	5111	18073		0	0		
2/22/2016	0.424	1180	4173		0	3617	12790		0	0		
2/23/2016	0.424	1833	6483	31	110	5070	17928		0	0		
2/24/2016	0.538	2100	9428		0	5010	22479		0	0		
2/25/2016	0.538		0		0	7100	31857		0	0		
2/26/2016	0.538		0		0	4814	21600		0	0		
2/27/2016	0.332		0		0	978	2708		0	0		
2/28/2016	0.332		0		0	9568	26493		0	0		
2/29/2016	0.332		0		0	4070	11269		0	0		
			0		0		0		0	0		
			0		0		0		0	0		
Total	12.555	2093		24		5940			0	0		

BOD rate adjustment for higher than Tier 2 TSS mg/L since November 2015. The facility must maintain less than Tier 2 for the BOD rate adjustment to be applied. Per DM.

Adjusted Calculations

Average Sampled Flow

	Conc. (mg/L)	Pounds	(MGD)
Flow			12.555
TSS	2093	219103	
O&G	24	2513	
BOD	5940	622013	

	Monthly Avg.
Flow	0.405
TSS	7068
O&G	81
BOD	20065

Threshold Values

	Tier 1	Tier 2
TSS (mg/L)	300	1200
O&G (mg/L)	100	400
BOD (mg/L)	250	2000

Extra Strength Unit Costs

	Tier 1	Tier 2
TSS ($/pound)	0.098	0.196
O&G ($/pound)	0.165	0.33
BOD ($/pound)	0.239	0.478

Actual Costs

Total Monthly Flow
(1000 gallons) ($/1000 gal) Total
12555 $2.397

Monthly Permit Fee **$500.00**
Monthly Sampline and Analysis Fee **$953.00**

TSS Permit Limit Monthly Avg. 700 lbs

Extra Strength

	Domestic Strength Pounds	Domestic Strength Charge ($/lbs)	Tier 1 (T1) Pounds	Tier 1 (T1) unit cost	T1 Charge	Tier 2 (T2) pounds	Tier 2 (T2) unit cost	T2 Charge	Total Strength Charge
TSS	31413	$0.00	94238	$0.098	$9,235.31	93453	0.196	$18,316.69	$27,552.00
O&G	10471	$0.00	0	$0.165	$0.00	0	0.33	$0.00	$0.00
BOD	26177	$0.00	183240	$0.239	$43,794.41	412596	0.478	$197,220.70	$241,015.11
		$0.00			**$53,029.72**			**$215,537.39**	**$268,567.11**

BOD Rate Adj.	$91,626.79
Total	$361,646.90
Tax	
Total	$361,646.90

Sioux City, Iowa WWTP
Industrial Billing

CHS
395 164th St.
South Sioux City, NE 68776

Account # **83646-1014018**

Date Sampled	Flow Daily mgd	S.S. Conc mg/l	Daily lbs/d	Grease Conc mg/l	Daily lbs/d	B.O.D. Conc mg/l	Daily lbs/d	Nitrate Conc mg/l	Daily lbs/d	Surcharge lbs/d	pH	Limits Exceeded
3/1/2016	0.332		0		0	8123	22492		0	0		
3/2/2016	0.371	2360	7302	0	0	7868	24345		0	0		
3/3/2016	0.371		0		0	1016	3144		0	0		
3/4/2016	0.371		0		0	4595	14218		0	0		
3/5/2016	0.538		0		0	7876	35339		0	0		
3/6/2016	0.538		0		0	8960	40203		0	0		
3/7/2016	0.538		0		0	6874	30843		0	0		
3/8/2016	0.538		0		0	905	4061		0	0		
3/9/2016	0.417	1833	6375	27	94	5282	18370		0	0		
3/10/2016	0.417		0		0	5186	18038		0	0		
3/11/2016	0.417		0		0	5818	20234		0	0		
3/12/2016	0.417	1650	5738	41	143	3141	10924		0	0		
3/13/2016	0.417		0		0	4447	15466		0	0		
3/14/2016	0.417		0		0	5053	17573		0	0		
3/15/2016	0.417		0		0	6087	21169		0	0		
3/16/2016	0.448		0		0	5468	20430		0	0		
3/17/2016	0.448		0		0	3574	13354		0	0		
3/18/2016	0.448		0		0	2526	9438		0	0		
3/19/2016	0.502		0		0	5482	22951		0	0		
3/20/2016	0.502	1500	6280	31	130	7278	30471		0	0		
3/21/2016	0.502		0		0	6295	26355		0	0		
3/22/2016	0.502	871	3647	169	708	1162	4865		0	0		
3/23/2016	0.094		0		0		0		0	0		
3/24/2016	0.094		0		0		0		0	0		
3/25/2016	0.094		0		0		0		0	0		
3/26/2016	0.016		0		0		0		0	0		
3/27/2016	0.016		0		0		0		0	0		
3/28/2016	0.016		0		0		0		0	0		
3/29/2016	0.016		0		0		0		0	0		
3/30/2016	0.167	673	937	51	71	1600	2228		0	0		
3/31/2016	0.167		0		0		0		0	0		
Total	10.548	1481		53		4983			0	0		

Adjusted Calculations

Average Sampled Flow

	Conc. (mg/L)	Pounds
Flow		
TSS	1481	130299
O&G	53	4677
BOD	4983	438383

(MGD) 10.548

Monthly Avg.
0.340
4203
151
14141

Threshold Values

	Tier 1	Tier 2
TSS (mg/L)	300	1200
O&G (mg/L)	100	400
BOD (mg/L)	250	2000

Extra Strength Unit Costs

	Tier 1	Tier 2
TSS ($/pound)	0.098	0.196
O&G ($/pound)	0.165	0.33
BOD ($/pound)	0.239	0.478

Actual Costs

Total Monthly Flow
(1000 gallons) 10548
($/1000 gal) $2.397
Total

Monthly Permit Fee **$500.00**
Monthly Sampline and Analysis Fee **$926.00**

TSS Permit Limit Monthly Avg. 700 lbs

Extra Strength

	Domestic Strength Pounds	Domestic Strength Charge ($/lbs)	Tier 1 (T1) Pounds	Tier 1 (T1) unit cost	T1 Charge	Tier 2 (T2) pounds	Tier 2 (T2) unit cost	T2 Charge	Total Strength Charge
TSS	26391	$0.00	79173	$0.098	$7,758.98	24734	0.196	$4,847.93	$12,606.91
O&G	8797	$0.00	0	$0.165	$0.00	0	0.33	$0.00	$0.00
BOD	21993	$0.00	153948	$0.239	$36,793.59	262442	0.478	$125,447.39	$162,240.98
		$0.00			**$44,552.57**			**$130,295.32**	**$174,847.89**

Total	$176,273.89
Tax	
Total	$176,273.89

Sioux City, Iowa WWTP
Industrial Billing

CHS
395 164th St.
South Sioux City, NE 68776

Account # **83646-1014018**

Date Sampled	Flow Daily mgd	CHS Meter Readings	S.S. Conc mg/l	Daily lbs/d	Grease Conc mg/l	Daily lbs/d	B.O.D. Conc mg/l	Daily lbs/d	Nitrate Conc mg/l	Daily lbs/d	Surcharge lbs/d	pH	Limits Exceeded
04/01/16	0.167	1570336		0		0	5494	7652		0	0		
04/02/16	0.517			0		0	6942	29932		0	0		
04/03/16	0.517			0		0	5904	25457		0	0		
04/04/16	0.517	3144916	1943	8378	30	129	4023	17346		0	0		
04/05/16	0.517	3665380		0		0		0		0	0		
04/06/16	0.419	3918412		0		0	6070	21211		0	0		
04/07/16	0.419	4467702		0		0	5538	19352		0	0		
04/08/16	0.459	5036880		0		0	5598	21429		0	0		
04/09/16	0.459			0		0	475	1818		0	0		
04/10/16	0.459			0		0	4407	16870		0	0		
04/11/16	0.459	6277260		0		0	5481	20982		0	0		
04/12/16	0.459	6767620		0		0	8226	31490		0	0		
04/13/16	0.478	7293310		0		0	9735	38809		0	0		
04/14/16	0.478	7732134		0		0	4844	19311		0	0		
04/15/16	0.792	8127344		0		0	5316	35114		0	0		
04/16/16	0.792			0		0	8381	55359		0	0		
04/17/16	0.792			0		0	9498	62737		0	0		
04/18/16	0.792	9582412		0		0	6843	45200		0	0		
04/19/16	0.792	119183		0		0	2979	19677		0	0		
04/20/16	3.291		1983	54427	16	439	5416	148653		0	0		
04/21/16	3.291	1017757		0		0	6357	174480		0	0		
04/22/16	3.291	1564418		0		0	6800	186639		0	0		
04/23/16	0.498			0		0	6667	27690		0	0		
04/24/16	0.498	2699625		0		0	2926	12153		0	0		
04/25/16	0.498		2340	9719	27	112	5422	22519		0	0		
04/26/16	0.498			0		0	6515	27059		0	0		
04/27/16	0.522			0		0	7394	32190		0	0		
04/28/16	0.522	4684721		0		0	7014	30535		0	0		
04/29/16	0.522			0		0		0		0	0		
04/30/16	0.522	5645602.5		0		0		0		0	0		
05/02/16		6606484		0		0		0		0	0		
Total	24.237	14.075	2089		24		5936			0	0		

Adjusted
Calculations

Average Sampled Flow					Threshold Values			Extra Strength Unit Costs		
	Conc. (mg/L)	Pounds	(MGD)	Monthly Avg.		Tier 1	Tier 2		Tier 1	Tier 2
Flow			14.075	0.454	TSS (mg/L)	300	1200	TSS ($/pound)	0.098	0.196
TSS	2089	245184		7909	O&G (mg/L)	100	400	O&G ($/pound)	0.165	0.33
O&G	24	2856		92	BOD (mg/L)	250	2000	BOD ($/pound)	0.239	0.478
BOD	5936	696783		22477						

Actual Costs

Total Monthly Flow						**Monthly Avg.**
(1000 gallons)	($/1000 gal)	Total	**Monthly Permit Fee**	**$500.00**	**TSS Permit Limit**	700 lbs
14075.2665	$2.397		**Monthly Sampline and Analysis Fee**	**$926.00**		

Extra Strength

	Domestic Strength			Tier 1 (T1)			Tier 2 (T2)			Total Strength		
	Pounds		Charge ($/lbs)	Pounds	unit cost	T1 Charge	pounds	unit cost	T2 Charge	Charge		
TSS	60641		$0.00	105649	$0.098	$10,353.60	78894	0.196	$15,463.20	$25,816.80		
O&G	20214		$0.00	0	$0.165	$0.00	0	0.33	$0.00	$0.00		
BOD	50534		$0.00	205429	$0.239	$49,097.41	440820	0.478	$210,712.16	$259,809.58	Total	$287,052.38
			$0.00			**$59,451.01**			**$226,175.37**	**$285,626.38**	Tax	
											Total	$287,052.38

Sioux City, Iowa WWTP
Industrial Billing

CHS
395 164th St.
South Sioux City, NE 68776

Account # 83646-1014018

Date Sampled	Flow Daily mgd	S.S. Conc mg/l	Daily lbs/d	Grease Conc mg/l	Daily lbs/d	B.O.D. Conc mg/l	Daily lbs/d	Nitrate Conc mg/l	Daily lbs/d	Surcharge lbs/d	pH	Limits Exceeded
4/1/2016			0		0	5494	0		0	0		
4/2/2016			0		0	6942	0		0	0		
4/3/2016			0		0	5904	0		0	0		
4/4/2016		1943	0	30	0	4023	0		0	0		
4/5/2016			0		0		0		0	0		
4/6/2016			0		0	6070	0		0	0		
4/7/2016			0		0	5538	0		0	0		
4/8/2016			0		0	5598	0		0	0		
4/9/2016			0		0	475	0		0	0		
4/10/2016			0		0	4407	0		0	0		
4/11/2016			0		0	5481	0		0	0		
4/12/2016			0		0	8226	0		0	0		
4/13/2016			0		0	9735	0		0	0		
4/14/2016			0		0	4844	0		0	0		
4/15/2016			0		0	5316	0		0	0		
4/16/2016			0		0	8381	0		0	0		
4/17/2016			0		0	9498	0		0	0		
4/18/2016			0		0	6843	0		0	0		
4/19/2016			0		0	2979	0		0	0		
4/20/2016		1983	0	16	0	5416	0		0	0		
4/21/2016			0		0	6357	0		0	0		
4/22/2016			0		0	6800	0		0	0		
4/23/2016			0		0	6667	0		0	0		
4/24/2016			0		0	2926	0		0	0		
4/25/2016		2340	0	27	0	5422	0		0	0		
4/26/2016			0		0	6515	0		0	0		
4/27/2016			0		0	7394	0		0	0		
4/28/2016			0		0	7014	0		0	0		
4/29/2016			0		0		0		0	0		
4/30/2016			0		0		0		0	0		
			0		0		0		0	0		
Total	14.075	2089		24		5936			0	0		

Adjusted Calculations

Average Sampled Flow

	Conc. (mg/L)	Pounds	(MGD)
Flow			14.075
TSS	2089	245184	
O&G	24	2856	
BOD	5936	696783	

Threshold Values	Monthly Avg.	Tier 1	Tier 2
	0.454		
TSS (mg/L)	7909	300	1200
O&G (mg/L)	92	100	400
BOD (mg/L)	22477	250	2000

Extra Strength Unit Costs	Tier 1	Tier 2
TSS ($/pound)	0.098	0.196
O&G ($/pound)	0.165	0.33
BOD ($/pound)	0.239	0.478

Actual Costs

Total Monthly Flow
(1000 gallons) ($/1000 gal) Total
14075.2665 $2.397

Monthly Permit Fee **$500.00**
Monthly Sampline and Analysis Fee **$897.00**

TSS Permit Limit **Monthly Avg.** 700 lbs

Extra Strength

	Domestic Strength Pounds	Domestic Strength Charge ($/lbs)	Tier 1 (T1) Pounds	Tier 1 (T1) unit cost	T1 Charge	Tier 2 (T2) pounds	Tier 2 (T2) unit cost	T2 Charge	Total Strength Charge
TSS	35216	$0.00	105649	$0.098	$10,353.60	104319	0.196	$20,446.44	$30,800.03
O&G	11739	$0.00	0	$0.165	$0.00	0	0.33	$0.00	$0.00
BOD	29347	$0.00	205429	$0.239	$49,097.41	462008	0.478	$220,839.65	$269,937.07
		$0.00			**$59,451.01**			**$241,286.09**	**$300,737.10**

Total	$302,134.10
Tax	
Total	$302,134.10

Sioux City, Iowa WWTP
Industrial Billing

CHS
395 164th St.
South Sioux City, NE 68776

Account # 83646-1014018

Date Sampled	Flow Daily mgd	S.S. Conc mg/l	Daily lbs/d	Grease Conc mg/l	Daily lbs/d	B.O.D. Conc mg/l	Daily lbs/d	Nitrate Conc mg/l	Daily lbs/d	Surcharge lbs/d	pH	Limits Exceeded
5/1/2016	0.522		0		0	7727	33639		0	0		
5/2/2016	0.522	2780	12103	35	152	6515	28363		0	0		
5/3/2016	0.522		0		0	8294	36108		0	0		
5/4/2016	0.455		0		0	4951	18788		0	0		
5/5/2016	0.455		0		0	7880	29902		0	0		
5/6/2016	0.497		0		0		0		0	0		
5/7/2016	0.497		0		0		0		0	0		
5/8/2016	0.497		0		0		0		0	0		
5/9/2016	0.497		0		0	858	3556		0	0		
5/10/2016	0.497	2330	9656		0	10028	41566		0	0		
5/11/2016	0.442		0		0	9924	36589		0	0		
5/12/2016	0.442		0		0	1100	4055		0	0		
5/13/2016	0.442		0		0	5355	19740		0	0		
5/14/2016	0.441		0		0	4787	17606		0	0		
5/15/2016	0.441		0		0	6067	22314		0	0		
5/16/2016	0.441		0		0	1988	7312		0	0		
5/17/2016	0.441		0		0	8116	29850		0	0		
5/18/2016	0.469	1840	7197	11	43	5627	22010		0	0		
5/19/2016	0.469		0		0	4799	18771		0	0		
5/20/2016	0.469		0		0	5536	21654		0	0		
5/21/2016	0.555		0		0	8680	40177		0	0		
5/22/2016	0.555		0		0	7292	33752		0	0		
5/23/2016	0.555	1900	8795	30	139	6602	30559		0	0		
5/24/2016	0.555		0		0	6855	31730		0	0		
5/25/2016	0.418		0		0	1838	6407		0	0		
5/26/2016	0.418		0		0	8269	28827		0	0		
5/27/2016	0.418		0		0	7745	27000		0	0		
5/28/2016	0.089		0		0	7188	5335		0	0		
5/29/2016	0.089		0		0	7130	5292		0	0		
5/30/2016	0.089		0		0	700	520		0	0		
5/31/2016	0.089		0		0		0		0	0		
Total	13.288	2213		25		5994			0	0		

Adjusted
Calculations

Average Sampled Flow

	Conc. (mg/L)	Pounds	(MGD)
Flow			13.288
TSS	2213	245193	
O&G	25	2807	
BOD	5994	664320	

Threshold Values

	Monthly Avg.		Tier 1	Tier 2
Flow	0.429	TSS (mg/L)	300	1200
TSS	7909	O&G (mg/L)	100	400
O&G	91	BOD (mg/L)	250	2000
BOD	21430			

Extra Strength Unit Costs

	Tier 1	Tier 2
TSS ($/pound)	0.098	0.196
O&G ($/pound)	0.165	0.33
BOD ($/pound)	0.239	0.478

Actual Costs

Total Monthly Flow (1000 gallons)	($/1000 gal)	Total
13288	$2.397	

Monthly Permit Fee	**$500.00**
Monthly Sampline and Analysis Fee	**$944.00**

	Monthly Avg.
TSS Permit Limit	700 lbs

Extra Strength

	Domestic Strength		Tier 1 (T1)			Tier 2 (T2)			Total Strength		
	Pounds	Charge ($/lbs)	Pounds	unit cost	T1 Charge	pounds	unit cost	T2 Charge	Charge		
TSS	33247	$0.00	99740	$0.098	$9,774.49	112207	0.196	$21,992.61	$31,767.10		
O&G	11082	$0.00	0	$0.165	$0.00	0	0.33	$0.00	$0.00		
BOD	27705	$0.00	193938	$0.239	$46,351.27	442676	0.478	$211,599.18	$257,950.45	Total	$291,161.55
		$0.00			**$56,125.76**			**$233,591.79**	**$289,717.55**	Tax	
										Total	$291,161.55

Sioux City, Iowa WWTP
Industrial Billing

CHS
395 164th St.
South Sioux City, NE 68776

Account # **83646-1014018**

Date Sampled	Flow Daily mgd	S.S. Conc mg/l	S.S. Daily lbs/d	Grease Conc mg/l	Grease Daily lbs/d	B.O.D. Conc mg/l	B.O.D. Daily lbs/d	Nitrate Conc mg/l	Nitrate Daily lbs/d	Surcharge lbs/d	pH	Limits Exceeded
6/1/2016	0.462		0		0	5304	20437		0	0		
6/2/2016	0.462	2550	9825	20	77	5426	20907		0	0		
6/3/2016	0.462		0		0	6677	25727		0	0		
6/4/2016	0.462		0		0	3342	12877		0	0		
6/5/2016	0.462		0		0	1566	6034		0	0		
6/6/2016	0.462	1012	3899	20	77	5160	19882		0	0		
6/7/2016	0.462		0		0	4520	17416		0	0		
6/8/2016	0.548		0		0	5012	22908		0	0		
6/9/2016	0.548		0		0	5967	27271		0	0		
6/10/2016	0.548		0		0	931	4255		0	0		
6/11/2016	0.432		0		0	5338	19232		0	0		
6/12/2016	0.432		0		0	6224	22424		0	0		
6/13/2016	0.432		0		0	6870	24752		0	0		
6/14/2016	0.432		0		0	292	1052		0	0		
6/15/2016	0.068		0		0		0		0	0		
6/16/2016	0.068		0		0		0		0	0		
6/17/2016	0.068		0		0		0		0	0		
6/18/2016			0		0		0		0	0		
6/19/2016			0		0		0		0	0		
6/20/2016			0		0		0		0	0		
6/21/2016			0		0		0		0	0		
6/22/2016			0		0		0		0	0		
6/23/2016			0		0		0		0	0		
6/24/2016			0		0		0		0	0		
6/25/2016			0		0		0		0	0		
6/26/2016			0		0		0		0	0		
6/27/2016			0		0		0		0	0		
6/28/2016			0		0		0		0	0		
6/29/2016			0		0		0		0	0		
6/30/2016			0		0		0		0	0		
			0		0		0		0	0		
Total	6.810	1781		20		4474			0	0		

Adjusted Calculations

Average Sampled Flow

	Conc. (mg/L)	Pounds	(MGD)
Flow			6.810
TSS	1781	101153	
O&G	20	1136	
BOD	4474	254074	

Threshold Values	Monthly Avg.	Tier 1	Tier 2
	0.220		
TSS (mg/L)	3263	300	1200
O&G (mg/L)	37	100	400
BOD (mg/L)	8196	250	2000

Extra Strength Unit Costs

	Tier 1	Tier 2
TSS ($/pound)	0.098	0.196
O&G ($/pound)	0.165	0.33
BOD ($/pound)	0.239	0.478

Actual Costs

Total Monthly Flow
(1000 gallons) ($/1000 gal) Total
6810 $2.397

Monthly Permit Fee **$500.00**
Monthly Sampline and Analysis Fee **$542.00**

TSS Permit Limit Monthly Avg. 700 lbs

Extra Strength

	Domestic Strength Pounds	Domestic Strength Charge ($/lbs)	Tier 1 (T1) Pounds	Tier 1 (T1) unit cost	T1 Charge	Tier 2 (T2) pounds	Tier 2 (T2) unit cost	T2 Charge	Total Strength Charge
TSS	17039	$0.00	51116	$0.098	$5,009.35	32998	0.196	$6,467.63	$11,476.99
O&G	5680	$0.00	0	$0.165	$0.00	0	0.33	$0.00	$0.00
BOD	14199	$0.00	99392	$0.239	$23,754.68	140483	0.478	$67,151.08	$90,905.75
		$0.00			**$28,764.03**			**$73,618.71**	**$102,382.74**

Credit	$24,596.23
Total	$78,828.51
Tax	
Total	$78,828.51

Sioux City, Iowa WWTP
Industrial Billing

CHS
395 164th St.
South Sioux City, NE 68776

Account # 83646-1014018

Date Sampled	Flow Daily mgd	S.S. Conc mg/l	Daily lbs/d	Grease Conc mg/l	Daily lbs/d	B.O.D. Conc mg/l	Daily lbs/d	Nitrate Conc mg/l	Daily lbs/d	Surcharge lbs/d	pH	Limits Exceeded
7/1/2016	0.007		0		0		0		0	0		
7/2/2016	0.007		0		0		0		0	0		
7/3/2016	0.007		0		0		0		0	0		
7/4/2016	0.007		0		0		0		0	0		
7/5/2016	0.007		0		0		0		0	0		
7/6/2016	0.007		0		0		0		0	0		
7/7/2016	0.007		0		0		0		0	0		
7/8/2016	0.007		0		0		0		0	0		
7/9/2016	0.007		0		0		0		0	0		
7/10/2016	0.007		0		0		0		0	0		
7/11/2016	0.007		0		0		0		0	0		
7/12/2016	0.007		0		0		0		0	0		
7/13/2016	0.007		0		0		0		0	0		
7/14/2016	0.007		0		0		0		0	0		
7/15/2016	0.007		0		0		0		0	0		
7/16/2016	0.007		0		0		0		0	0		
7/17/2016	0.007		0		0		0		0	0		
7/18/2016	0.007		0		0		0		0	0		
7/19/2016	0.007		0		0		0		0	0		
7/20/2016	0.007		0		0		0		0	0		
7/21/2016	0.007		0		0		0		0	0		
7/22/2016	0.007		0		0		0		0	0		
7/23/2016	0.007		0		0		0		0	0		
7/24/2016	0.007		0		0		0		0	0		
7/25/2016	0.007		0		0		0		0	0		
7/26/2016	0.007		0		0		0		0	0		
7/27/2016	0.007		0		0		0		0	0		
7/28/2016	0.007		0		0		0		0	0		
7/29/2016	0.007		0		0		0		0	0		
7/30/2016	0.007		0		0		0		0	0		
	0.007		0		0		0		0	0		
Total	0.217	0		0		0			0	0		

Facility in operational shut down the entire month of July 2016. Per DM

Adjusted
Calculations

Average Sampled Flow

	Conc. (mg/L)	Pounds	(MGD)	Monthly Avg.
Flow			0.217	0.007
TSS	0	0		0
O&G	0	0		0
BOD	0	0		0

Threshold Values

	Tier 1	Tier 2
TSS (mg/L)	300	1200
O&G (mg/L)	100	400
BOD (mg/L)	250	2000

Extra Strength Unit Costs

	Tier 1	Tier 2
TSS ($/pound)	0.098	0.196
O&G ($/pound)	0.165	0.33
BOD ($/pound)	0.239	0.478

Actual Costs

Total Monthly Flow

(1000 gallons)	($/1000 gal)	Total
217	$2.397	

Monthly Permit Fee $500.00
Monthly Sampline and Analysis Fee $0.00

TSS Permit Limit Monthly Avg. 700 lbs

Extra Strength

	Domestic Strength Pounds	Domestic Strength Charge ($/lbs)	Tier 1 (T1) Pounds	Tier 1 (T1) unit cost	Tier 1 (T1) T1 Charge	Tier 2 (T2) pounds	Tier 2 (T2) unit cost	Tier 2 (T2) T2 Charge	Total Strength Charge
TSS	543	$0.00	0	$0.098	$0.00	0	0.196	$0.00	$0.00
O&G	181	$0.00	0	$0.165	$0.00	0	0.33	$0.00	$0.00
BOD	452	$0.00	0	$0.239	$0.00	0	0.478	$0.00	$0.00
		$0.00			**$0.00**			**$0.00**	**$0.00**

Total	$500.00
Tax	
Total	$500.00

Sioux City, Iowa WWTP
Industrial Billing

CHS
395 164th St.
South Sioux City, NE 68776

Account # **83646-1014018**

Date Sampled	Flow Daily mgd	S.S. Conc mg/l	Daily lbs/d	Grease Conc mg/l	Daily lbs/d	B.O.D. Conc mg/l	Daily lbs/d	Nitrate Conc mg/l	Daily lbs/d	Surcharge lbs/d	pH	Limits Exceeded
8/1/2016	0.007		0		0		0		0	0		
8/2/2016	0.007		0		0		0		0	0		
8/3/2016	0.007		0		0		0		0	0		
8/4/2016	0.007		0		0		0		0	0		
8/5/2016	0.007		0		0	4184	244		0	0		
8/6/2016	0.387		0		0	1867	6026		0	0		
8/7/2016	0.387		0		0	3211	10364		0	0		
8/8/2016	0.387		0		0	4576	14769		0	0		
8/9/2016	0.387		0		0	4457	14385		0	0		
8/10/2016	0.444		0		0	2810	10405		0	0		
8/11/2016	0.444		0		0		0		0	0		
8/12/2016	0.444		0		0	1713	6343		0	0		
8/13/2016	0.457		0		0	6260	23859		0	0		
8/14/2016	0.457		0		0	5374	20482		0	0		
8/15/2016	0.457	3986	15192	31	118	6442	24553		0	0		
8/16/2016	0.457		0		0	981	3739		0	0		
8/17/2016	0.200		0		0	2785	4845		0	0		
8/18/2016	0.200		0		0	4617	7701		0	0		
8/19/2016	0.200		0		0	6658	11106		0	0		
8/20/2016	0.439		0		0	700	2563		0	0		
8/21/2016	0.439	2490	9117	44	161	2323	8505		0	0		
8/22/2016	0.439		0		0	3640	13327		0	0		
8/23/2016	0.439		0		0	5333	19525		0	0		
8/24/2016	0.593		0		0	5412	26766		0	0		
8/25/2016	0.593		0		0	3196	15806		0	0		
8/26/2016	0.521		0		0		0		0	0		
8/27/2016	0.521		0		0		0		0	0		
8/28/2016	0.521		0		0		0		0	0		
8/29/2016	0.521		0		0	5355	23268		0	0		
8/30/2016	0.521		0		0	3249	14117		0	0		
8/31/2016	0.514		0		0	4644	19908		0	0		
Total	11.404	3238		38		3904			0	0		

Facility in operational shut down the entire month of July 2016. Per DM

Adjusted
Calculations

Average Sampled Flow

	Conc. (mg/L)	Pounds
Flow		11.404 (MGD)
TSS	3238	307964
O&G	38	3567
BOD	3904	371286

Threshold Values

	Monthly Avg.		Tier 1	Tier 2
Flow	0.368	TSS (mg/L)	300	1200
TSS	9934	O&G (mg/L)	100	400
O&G	115	BOD (mg/L)	250	2000
BOD	11977			

Extra Strength Unit Costs

	Tier 1	Tier 2
TSS ($/pound)	0.098	0.196
O&G ($/pound)	0.165	0.33
BOD ($/pound)	0.239	0.478

Actual Costs

Total Monthly Flow (1000 gallons)	($/1000 gal)	Total
11404	$2.397	

Monthly Permit Fee **$500.00**
Monthly Sampline and Analysis Fee **$1,208.00**

TSS Permit Limit Monthly Avg. 700 lbs

Extra Strength

	Domestic Strength Pounds	Domestic Strength Charge ($/lbs)	Tier 1 (T1) Pounds	Tier 1 (T1) unit cost	T1 Charge	Tier 2 (T2) pounds	Tier 2 (T2) unit cost	T2 Charge	Total Strength Charge
TSS	28533	$0.00	85598	$0.098	$8,388.65	193833	0.196	$37,991.24	$46,379.89
O&G	9511	$0.00	0	$0.165	$0.00	0	0.33	$0.00	$0.00
BOD	23777	$0.00	166441	$0.239	$39,779.49	181068	0.478	$86,550.29	$126,329.78
		$0.00			**$48,168.14**			**$124,541.53**	**$172,709.67**

Total	$174,417.67
Tax	
Total	$174,417.67

Sioux City, Iowa WWTP
Industrial Billing

CHS
395 164th St.
South Sioux City, NE 68776

Account # **83646-1014018**

Date Sampled	Flow Daily mgd	S.S. Conc mg/l	S.S. Daily lbs/d	Grease Conc mg/l	Grease Daily lbs/d	B.O.D. Conc mg/l	B.O.D. Daily lbs/d	pH	Limits Exceeded
9/1/2016		615	0	32	0	1596	0		
9/2/2016			0		0	4229	0		
9/3/2016			0		0	2270	0		
9/4/2016			0		0	4654	0		
9/5/2016			0		0	1712	0		
9/6/2016			0		0	6153	0		
9/7/2016			0		0	6514	0		
9/8/2016			0		0	6639	0		
9/9/2016			0		0	4530	0		
9/10/2016			0		0	2700	0		
9/11/2016			0		0	5242	0		
9/12/2016		2960	0	1	0	6636	0		
9/13/2016			0		0		0		
9/14/2016			0		0	6649	0		
9/15/2016			0		0	2703	0		
9/16/2016			0		0	136	0		
9/17/2016			0		0	5680	0		
9/18/2016		1180	0	10	0	6656	0		
9/19/2016			0		0	5264	0		
9/20/2016			0		0	4898	0		
9/21/2016			0		0	2267	0		
9/22/2016			0		0	290	0		
9/23/2016			0		0	7744	0		
9/24/2016			0		0	5864	0		
9/25/2016			0		0		0		
9/26/2016			0		0		0		
9/27/2016		157	0		0	1092	0		
9/28/2016		1471	0		0	4104	0		
9/29/2016			0		0		0		
9/30/2016			0		0	7984	0		
			0		0		0		
Total	17.488	1277		14		4393			

Adjusted Calculations

Average Sampled Flow

	Conc. (mg/L)	Pounds	(MGD)	Monthly Avg.
Flow			17.488	0.564
TSS	1277	186192		6006
O&G	14	2091		67
BOD	4393	640651		20666

Threshold Values

	Tier 1	Tier 2
TSS (mg/L)	300	1200
O&G (mg/L)	100	400
BOD (mg/L)	250	2000

Extra Strength Unit Costs

	Tier 1	Tier 2
TSS ($/pound)	0.098	0.196
O&G ($/pound)	0.165	0.33
BOD ($/pound)	0.239	0.478

Actual Costs

Total Monthly Flow

(1000 gallons)	($/1000 gal)	Total
17488	$2.397	

Monthly Permit Fee **$500.00**
Monthly Sampline and Analysis Fee **$1,237.00**

TSS Permit Limit **Monthly Avg.** 700 lbs

Extra Strength

	Domestic Strength Pounds	Domestic Strength Charge ($/lbs)	Tier 1 (T1) Pounds	Tier 1 (T1) unit cost	T1 Charge	Tier 2 (T2) pounds	Tier 2 (T2) unit cost	T2 Charge	Total Strength Charge
TSS	43755	$0.00	131265	$0.098	$12,863.96	11172	0.196	$2,189.73	$15,053.70
O&G	14585	$0.00	0	$0.165	$0.00	0	0.33	$0.00	$0.00
BOD	36462	$0.00	255237	$0.239	$61,001.73	348952	0.478	$166,798.84	$227,800.57
		$0.00			**$73,865.69**			**$168,988.57**	**$242,854.26**

Total	$244,591.26	$66,039.64
Tax		
Total	$244,591.26	$178,551.62

Sioux City, Iowa WWTP
Industrial Billing

CHS
395 164th St.
South Sioux City, NE 68776

Account # **83646-1014018**

Date Sampled	Flow Daily mgd	S.S. Conc mg/l	S.S. Daily lbs/d	Grease Conc mg/l	Grease Daily lbs/d	B.O.D. Conc mg/l	B.O.D. Daily lbs/d	pH Limits Exceeded
10/1/2016	0.468		0		0	6348	24777	
10/2/2016	0.468		0		0	3842	14996	
10/3/2016	0.468		0		0	4843	18903	
10/4/2016	0.542		0		0		0	
10/5/2016	0.684	94	536	34	194	6743	38456	
10/6/2016	0.329	216	593		0	2936	8056	
10/7/2016	0.58		0		0	5916	28617	
10/8/2016	0.58		0		0	9954	48149	
10/9/2016	0.58		0		0	9424	45586	
10/10/2016	0.021		0		0		0	
10/11/2016	0.053		0		0	6160	2723	
10/12/2016	0.053		0		0	3271	1446	
10/13/2016	0.502	1720	7201	23	96	2078	8700	
10/14/2016	0.502		0		0		0	
10/15/2016	0.502		0		0	7971	33372	
10/16/2016	0.593		0		0	8062	39872	
10/17/2016	0.486		0		0	7850	31818	
10/18/2016	0.401		0		0	4660	18585	
10/19/2016	0.541	2180	9836		0	4080	18409	
10/20/2016	0.541		0		0	4182	18869	
10/21/2016	0.541		0		0		0	
10/22/2016	0.541		0		0		0	
10/23/2016	0.541		0		0		0	
10/24/2016	0.541	2880	12994		0	7390	33343	
10/25/2016	0.423		0		0	9980	35208	
10/26/2016	0.621		0		0	6048	31323	
10/27/2016	0.876		0		0	3893	28442	
10/28/2016	0.876		0		0	3850	28127	
10/29/2016	0.378		0		0	4939	15970	
10/30/2016	0.378		0		0	5818	18341	
10/31/2016	0.378		0		0	7570	23865	
Total	14.988	1418	1005	29		5912		

Adjusted Calculations

Average Sampled Flow

	Conc. (mg/L)	Pounds	(MGD)	Monthly Avg.	Domestic Strength		Discharge Rate	
Flow			14.988	0.483				
TSS	1418	177250		5718	TSS (mg/L)	300	TSS ($/pound)	0.12
O&G	29	3562		115	O&G (mg/L)	100	O&G ($/pound)	0.22
BOD	5912	739040		23840	BOD (mg/L)	250	BOD ($/pound)	0.239

Actual Costs

Total Monthly Flow

(1000 gallons)	($/1000 gal)	Total
14988	$2.397	

Monthly Permit Fee
Monthly Sampline and Analysis Fee

Extra Strength

	Domestic Strength			Cost for Treatment		Total Strength
	Pounds	Charge ($/lbs)	Pounds	unit cost	T1 Charge	Charge
TSS	37500	$0.00	139750	$0.098	$13,695.49	$13,695.49
O&G	12500	$0.00	0	$0.165	$0.00	$0.00
BOD	31250	$0.00	707790	$0.239	$169,161.70	$169,161.70
		$0.00			**$182,857.19**	**$182,857.19**

Total	$182,857.19	$85,942.88	
Tax			
Total	$182,857.19	$96,914.31	$85,942.88

Sioux City, Iowa WWTP
Industrial Billing

CHS
395 164th St.
South Sioux City, NE 68776

Account # **83646-1014018**

Date Sampled	Flow Daily mgd	S.S. Conc mg/l	S.S. Daily lbs/d	Grease Conc mg/l	Grease Daily lbs/d	B.O.D. Conc mg/l	B.O.D. Daily lbs/d	pH	Limits Exceeded
11/1/2016	0.537	1930	8644		0	3606	16150		
11/2/2016	0.442	850	3133		0	1025	3778		
11/3/2016	0.442	3900	14376		0	9380	34577		
11/4/2016	0.442	1800	6635		0	7985	29435		
11/5/2016	0.516	767	3301		0	7865	33847		
11/6/2016	0.516	2417	10401		0	8016	34496		
11/7/2016	0.516	2833	12192		0		0		
11/8/2016	0.516	1717	7389		0	6478	27878		
11/9/2016	0.568	2100	9948	28	133	6328	29976		
11/10/2016	0.568	1183	5604		0	3890	18427		
11/11/2016	0.444	80	296		0	116	430		
11/12/2016	0.444	1433	5306		0	2960	10961		
11/13/2016	0.444	1567	5803		0	5600	20737		
11/14/2016	0.444	1233	4566		0	7057	26132		
11/15/2016	0.444	567	2100		0	3486	12909		
11/16/2016	0.436		0		0	3506	12749		
11/17/2016	0.436	700	2545		0		0		
11/18/2016	0.436	4000	14545		0		0		
11/19/2016	0.227	1350	2556		0		0		
11/20/2016	0.227		0		0		0		
11/21/2016	0.227		0		0		0		
11/22/2016	0.227		0		0		0		
11/23/2016	0.227		0		0		0		
11/24/2016	0.012		0		0		0		
11/25/2016	0.012		0		0		0		
11/26/2016	0.012		0		0		0		
11/27/2016	0.012		0		0		0		
11/28/2016	0.012		0		0		0		
11/29/2016	0.012		0		0	127	13		
11/30/2016	0.024		0		0	90	18		
			0		0	7570	0		
Total	9.822	1690	3850	0		4727			

Adjusted Calculations

Average Sampled Flow

	Conc. (mg/L)	Pounds	(MGD)	Monthly Avg.	Domestic Strength		Discharge Rate	
Flow			9.822	0.317				
TSS	1690	138469		4467	TSS (mg/L)	300	TSS ($/pound)	0.12
O&G	0	0		0	O&G (mg/L)	100	O&G ($/pound)	0.22
BOD	4727	387210		12491	BOD (mg/L)	250	BOD ($/pound)	0.239

Actual Costs

Total Monthly Flow

(1000 gallons)	($/1000 gal)	Total
9822	$2.397	

Monthly Permit Fee **$500.00**
Monthly Sampline and Analysis Fee **$623.00**

Extra Strength

	Domestic Strength			Cost for Treatment		Total Strength
	Pounds	Charge ($/lbs)	Pounds	unit cost	T1 Charge	Charge
TSS	24575	$0.00	113894	$0.120	$13,667.32	$13,667.32
O&G	8192	$0.00	0	$0.165	$0.00	$0.00
BOD	20479	$0.00	366731	$0.239	$87,648.72	$87,648.72
		$0.00			**$101,316.05**	**$101,316.05**

Total	$102,439.05
Tax	
Total	$102,439.05

Sioux City, Iowa WWTP
Industrial Billing

CHS
395 164th St.
South Sioux City, NE 68776

Account # **83646-1014018**

Date Sampled	Flow Daily mgd	S.S. Conc mg/l	S.S. Daily lbs/d	Grease Conc mg/l	Grease Daily lbs/d	B.O.D. Conc mg/l	B.O.D. Daily lbs/d	pH	Limits Exceeded
12/1/2016	0.024	20	4		0	71	14		
12/2/2016	0.024		0		0		0		
12/3/2016	0.187	115	179	11	17	3295	5139		
12/4/2016	0.187		0		0		0		
12/5/2016	0.187		0		0	5443	8489		
12/6/2016	0.187		0		0		0		
12/7/2016	0.187		0		0		0		
12/8/2016	0.187		0		0	3252	5072		
12/9/2016	0.187		0		0		0		
12/10/2016	0.376		0		0		0		
12/11/2016	0.376	3460	10850		0		0		
12/12/2016	0.376		0		0	2450	7683		
12/13/2016	0.376		0		0	3654	11458		
12/14/2016	0.344		0		0	5398	15487		
12/15/2016	0.344		0		0	6146	17633		
12/16/2016	0.344		0		0	9536	27358		
12/17/2016	0.303		0		0	3714	9385		
12/18/2016	0.303		0		0	342	864		
12/19/2016	0.303		0		0	7438	18796		
12/20/2016	0.303		0		0	7040	17790		
12/21/2016	0.315	1560	4098	43	113	5953	15639		
12/22/2016	0.315	660	1734	48	126	6854	18006		
12/23/2016	0.315		0		0		0		
12/24/2016	0.009		0		0		0		
12/25/2016	0.009		0		0		0		
12/26/2016	0.009		0		0		0		
12/27/2016	0.009		0		0		0		
12/28/2016	0.001		0		0		0		
12/29/2016	0.001		0		0		0		
12/30/2016	0.001		0		0		0		
12/31/2016	0.027		0		0		0		
Total	6.116	1163	544	0		4706			

Adjusted Calculations

Average Sampled Flow

	Conc. (mg/L)	Pounds	(MGD)	Monthly Avg.	Domestic Strength		Discharge Rate	
Flow			6.116	0.197				
TSS	1163	59322		1914	TSS (mg/L)	300	TSS ($/pound)	0.12
O&G	0	0		0	O&G (mg/L)	100	O&G ($/pound)	0.22
BOD	4706	240027		7743	BOD (mg/L)	250	BOD ($/pound)	0.239

Actual Costs

Total Monthly Flow

(1000 gallons)	($/1000 gal)	Total
6116	$2.397	

Monthly Permit Fee **$500.00**
Monthly Sampline and Analysis Fee **$597.00**

Extra Strength

	Domestic Strength			Cost for Treatment		Total Strength
	Pounds	Charge ($/lbs)	Pounds	unit cost	T1 Charge	Charge
TSS	15302	$0.00	44019	$0.120	$5,282.33	$5,282.33
O&G	5101	$0.00	0	$0.220	$0.00	$0.00
BOD	12752	$0.00	227276	$0.239	$54,318.86	$54,318.86
		$0.00			**$59,601.19**	**$59,601.19**

Total	$60,698.19
Tax	
Total	$60,698.19

YTD Invoice Totals	
Jan-14	$214,751.05
Feb-14	$361,646.90
Mar-14	#REF!
Apr-14	$287,052.38
May-14	$291,161.55
Jun-14	$78,828.51
Jul-14	$174,417.67
Aug-14	$244,591.26
Sep-14	$182,857.19
Oct-14	~~$182,857.19~~
Nov-14	$102,439.05
Dec-14	$60,698.19
Total	#REF!
Average	#REF!

176,273.89

2,179,717.59

4/1/2016	1634834
4/2/2016	
4/3/2016	
4/4/2016	
4/5/2016	3704515
4/6/2016	
4/7/2016	4543347
4/8/2016	
4/9/2016	
4/10/2016	
4/11/2016	
4/12/2016	6839618
4/13/2016	
4/14/2016	7794671
4/15/2016	
4/16/2016	
4/17/2016	
4/18/2016	
4/19/2016	1755390
4/20/2016	
4/21/2016	
4/22/2016	1629645
4/23/2016	
4/24/2016	
4/25/2016	
4/26/2016	3620318
4/27/2016	—
4/28/2016	
4/29/2016	
4/30/2016	

Forward To: EJ ☐ EPCRA / RMP / TSCA ☑ CWA ☐ Wetlands ☐ UIC ☐ PWS ☐ CAA / CFC ☐ RCRA ☐ UST ☐ SPCC ☐

REGION VII MULTIMEDIA SCREENING CHECKLIST

Facility Name: CHS, Inc.
Facility Ownership: CHS Inc.
Street: 395 164th St.
City: South Sioux City State: IA Zip: 68776
Phone: 402-404-8522 Facility Contact: Chris Oehler, PM
Number of Employees: 74 Work Hours/Shifts 24/7 4 shifts Facility Subject to OSHA regulations Yes ☐ No ☐

Inspector Pete Green
Primary Media: Wastewater
Inspector Phone Ext.: x 7343
Date: Jan 11, 2017
SIC/NAICS Code 2075

Main facility activity, major process chemical(s) & description: soy white flake - concentrate + isolate protein through mechanical + enzyme, dry + pasteurize to produce protein powder

(**Check all that apply**): painting/coating (water-based ☐, solvent-based ☐), printing ☐, reacting ☐, formulating ☐, distilling ☐, water treatment ☑, refrigeration ☐, manufacturing ☐, parts washers/degreasing (water-based ☐, halogenated-based ☐, non-halogenated-based ☐), combustion (boiler, furnaces, oxidizers) ☑ plating (chrome ☐, other Safety).

ENVIRONMENTAL JUSTICE (Note: Forward to EJ if a concern is identified during your inspection)

1. Is the facility located in an apparent low income area (e.g., with many abandoned and dilapidated properties)? No ☑ (stop) Yes ☐
   If yes, is facility less then 1000 feet from nearest routinely occupied property (house, school, etc.)? No ☐ (stop) Yes ☐ *Forward to EJ*

EMERGENCY PLANNING & COMMUNITY RIGHT TO KNOW ACT (EPCRA) & TOXIC SUBSTANCE CONTROL ACT (TSCA)

1. Did facility file a Tier II report with fire department, Local & State Emergency Planning Committee? Yes ☑ No ☐ *Forward to EPCRA*
2. Did facility manufacture, import, or process (formulate, blend, package) >25,000 lbs of a chemical (caustic, HCl) or >100 lbs of a Persistent Bioaccumulative Toxin (lead, mercury, or polycyclic aromatic compounds) at any time over the last 5 years? No ☑ (stop) Yes ☐ *Forward to EPCRA*
3. Has the facility: ***If any box in question 3 is marked - Forward to EPCRA***
   a. Stored ≥500 lbs of ammonia ☐, ≥100 lbs of chlorine ☐, or ≥10,000 lbs of an industrial chemical (caustic, HCl.) ☑, at any time over the last 2 years? ☐
   b. Stored ≥10,000 lbs of pressurized flammable material (propane, methane, butane, pentane, etc.) at any time over the last 2 years? ☐
   c. Used ≥10,000 lbs of ammonia ☐, chlorine ☐, halogenated solvents ☐, solvent-based paints ☐, or solvents ☐, or nitrated compound, over the last calendar year? ☐
   d. Generated ≥ one half pound of metal dusts, fumes, or metal turnings, over the last calendar year? ☐
4. Does the facility have any oil filled electrical equipment No ☑ (stop) Yes ☐ *Forward to TSCA and ask* Has facility tested oil filled equipment to determine PCB content; No ☐ Yes ☐ number containing PCBs greater than 50 ppm _____ and percent of all equipment tested _____. Is equipment leaking (including wet or weeping equipment)? No ☐ Yes ☐ – *Get Photo*
   City transformers

CLEAN WATER ACT (CWA) - National Pollution Discharge Elimination System (NPDES), Industrial Pretreatment, Storm Water, & Wetlands

1. Does the facility discharge any wastewater to storm sewers, surface water, or the land? No ☑ (stop) Yes ☐
   If yes, are all wastewater discharges permitted? Yes ☑ No ☐ *Forward to CWA*
2. Does the facility have process wastewaters that are discharged to a city POTW (Publicly Owned Treatment Works)? No ☐ (stop) Yes ☑
   If yes, are the discharges permitted by: State? ☐, City? ☑ – If yes, Stop here. No ☐ *Forward to CWA*
   If yes, does the city have a state or EPA approved pretreatment program? Yes ☑ No or Don't Know ☐ *Forward to CWA*
3. During rainfall events, can storm water carry pollutants from manufacturing, processing, storage, disposal, shipping and receiving areas, or from construction sites >1 acre, to storm sewers or surface water? No ☐ (stop) Yes ☑
   If yes, does the facility have an NPDES permit for these storm water discharges? Yes ☑ No ☐ *Forward to CWA*
4. Did you see any wastewater discharges not identified by the facility? No ☑ (stop) Yes ☐ - Identify location, time, appearance of discharge: _____ (*Get Photo*) *Forward to CWA*
5. Does the facility have any wetland areas (e.g. streams, ponds, or temporarily wet areas)? No ☑ (stop) Yes ☐
   If yes, have any wetland areas been dredged, filled, channelized, dammed, or had gravel removed from them within the last 5 years?
   No ☐ (stop) Yes ☐ - Identify location and timeframe _____ (*Get Photo*) *FWD to Wetlands*

SAFE DRINKING WATER ACT (SDWA) - Underground Injection Control (UIC) & Public Water System (PWS)

1. Does facility discharge any liquids to the subsurface (septic systems, disposal wells, cesspools, etc.)? No ☑ (stop) Yes ☐ *Forward to UIC*
   If yes, do these liquid wastes consist of sanitary wastewater only? Yes ☐ No ☐
2. Does facility provide drinking water to 25 people or more from its own source (private well, pond, etc)? No ☑ (stop) Yes ☐ *Forward to PWS*
   If yes, does the facility test or monitor its drinking water in order to comply with state regulations? Yes ☐ No ☐

CLEAN AIR ACT (CAA) and CFCs

1. Do you see any dense, non-steam, smoke or dust emissions leaving the facility property? No ☑ Yes ☐ *Forward to CAA*
   Source_____ (*Get Photo*)
2. Does the facility have any new air pollution emitting equipment that was constructed or installed in the past 5 years? No ☑ (stop) Yes ☐
   If yes, is equipment permitted? Yes ☐ No ☐ *Forward to CAA* Describe:_____
3. Does the facility have any cooling units that contain >50 lbs of refrigerant? No ☑ (stop) Yes ☐ *Forward to CFC*
   If yes, are these units: Self-serviced? ☐ Contract Serviced? ☐ - Service Company:_____
4. Does the facility have a refrigeration process that contains more than 10,000 lbs of ammonia ? No ☑ (stop) Yes ☐ *Forward to EPCRA/RMP*
5. Does the facility service motor vehicle air conditioning systems? No ☑ (stop) Yes ☐ *Forward to CFC*

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) and UNDERGROUND STORAGE TANKS (UST)

1. Does the facility generate more than 30-gallons (220 lbs./100kg) of hazardous waste per month or at any one time? No ☑ (stop) Yes ☐
   If yes, does facility have an EPA Hazardous Waste Identification Number? Yes ☐ (stop) No ☑ *Forward to RCRA*
2. Is hazardous waste treated ☐ , stored >90-days ☐, burned ☐ , land filled ☐ , put in surface impoundments ☐ or waste piles ☐ ?
   No ☐ (stop) Yes ☐ If yes, is the facility permitted for above described activity? Yes ☐ No ☐ *Forward to RCRA*
3. Did you see or does the facility have any large quantities of materials **that the facility claims to be non-hazardous waste material** (>10 drums, roll-offs, waste piles, etc. – exclude clean office trash, cardboard, & packaging type wastes)? No ☐ (stop) Yes ☐

Material Claimed To Be Non-Hazardous	How does the facility know these wastes are non-hazardous?
okara - sold to farms	Testing, industry or manuf. info.., MSDS, etc. ☐ ; None available ☐ *Forward to RCRA*
	Testing, industry or manuf. info.., MSDS, etc. ☐ ; None available ☐ *Forward to RCRA*
	Testing, industry or manuf. info.., MSDS, etc. ☐ ; None available ☐ *Forward to RCRA*
	Testing, industry or manuf. info.., MSDS, etc. ☐ ; None available ☐ *Forward to RCRA*
	Testing, industry or manuf. info.., MSDS, etc. ☐ ; None available ☐ *Forward to RCRA*

4. Did you see any leaking hazardous waste containers, drums, or tanks? No ☑ Yes ☐ *Forward to RCRA*
   Describe:_____ (*Get Photo*)
5. Did you see any signs of spills or releases (e.g., dead or stressed vegetation, stains, discoloration)? No ☑ Yes ☐ *Forward to RCRA*
   Describe:_____ (*Get Photo*)
6. Did you see any chemical or waste handling practices that concern you (access to children/public)? No ☑ Yes ☐ *Forward to RCRA & EPCRA* Describe:_____ (*Get Photo*)
7. Does the facility have any past or present underground petroleum product or hazardous material tanks? No ☑ Yes ☐ *Forward to UST*
8. Does the facility have any underground fuel tanks for emergency generators? No ☑ Yes ☐ *Forward to UST*

SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN (SPCC)

1. Does the facility have any aboveground oil tanks (petroleum, synthetic, animal, fish, vegetable), with an aggregate volume >1,320 gallons?
   No ☑ (stop) Yes ☐ - Does the facility have a certified SPCC Plan? Yes ☐ No ☐ *Forward to SPCC*
   If yes, are there secondary containment systems for the tanks? Yes ☐ No ☐ *Forward to SPCC*
   If yes, are any tanks leaking where oil could reach waters of the State or U.S.? No ☐ Yes ☐ (*Get Photo*) *Forward to SPCC*

ENVIRONMENTAL MANAGEMENT SYSTEMS (EMS)

1. Does your facility have an EMS? No ☐ Yes ☐
2. Is the facility's EMS ISO 14001 certified? No ☑ Yes ☐ pursuing working on it

** PLEASE TAKE PHOTOS TO DOCUMENT POTENTIAL PROBLEMS*

Green, Pete

From: Oehler, Christopher <Christopher.Oehler@chsinc.com>
Sent: Monday, January 16, 2017 3:52 PM
To: Green, Pete
Cc: Oehler, Christopher; Larson, Eric; Duncan, Scott; terry.johnson@nebraska.gov; curtis.christiansen@nebraska.gov
Subject: CHS South Sioux City follow up to EPA and NDEQ visit 1-11-2017
Attachments: removed.txt; Effluent reports Decmber 2016.pdf; Effluent reports Jan through 1-12-17.pdf; SDS US - Crystal Clean 142 Mineral Spirits(915876) Revision date 2-11-15.pdf; Soy protein production flowsheet-summary 02.2016.docx; SSC CHS industrial billing July-Dec 2016.pdf; wastewater permit sioux city 2016.pdf

Good Afternoon Mr. Green,
The following attachments and explanation is in response to the requests made during the 1-11-2017 compliance audit conducted at the South Sioux City CHS facility located at 395 164th St., South Sioux City, NE. Please let me know if any additional follow up is necessary. Per the closing comments at the end of the meeting, I will be looking for a formal report from Lantz Tipton, EPA following his receipt of your report which is due to Mr. Tipton within 30 days of the audit. I appreciate the professional, helpful execution of the audit by your team.

1. The first attachment is the effluent report by day for December. The struggle that was described during the audit in controlling pH at the outfall started on December 4 and was an intermittent problem through December 13th. A separate issue where the pH was high vs. low is reflected (again intermittently) from 12/17 through 12/22. The ability to troubleshoot the intermittent problem slowed progress toward solution. The first attempts were focused on a bad probe and/or calibration issue. The failed attempts eventually led to the heat trace and insulation addition as we showed you during the tour. We do not believe the pH dropped below a 4.0 or exceeded a 12.0 as the capability of the probe is not accurate outside that range. A change in staffing resulted in a failure to review the reports daily during the Dec 4-12 time period. That issue has now been resolved in that we are requiring a daily signature to the printed effluent log.
2. The second attachment is the January effluent reports. In order to support that we effectively have corrected the pH issue, I wanted to provide back up documentation.
3. Attached is the Mineral Spirits SDS per your request. Halogen based products are not being used in the facility parts washer.
4. Process flowchart per your request. This document should be designated company confidential.
5. The summary of sampling data by month since July from the City of Sioux City, IA. The City of Sioux City is working as a contract vendor for the City of South Sioux City, NE to collect and process samples and prepare billing information.
6. Copy of Current permit with the City of Sioux City, IA that will expire in April 2017. At present time, the city of Sioux City, IA does not intend to offer a new permit. CHS had entered into a long term agreement with Big Ox Energy that should have covered the transition, but now that CHS has been notified that the City of South Sioux City is the responsible party to initiate a permit or an ordinance we are working with all necessary parties to find a workable path forward. The intention of CHS is to continue to comply with the permit included in this email until the issue is resolved.

Chris Oehler
Plant Manager

395 164th Street PO Box 894 | South Sioux City, NE 68776
P 402-404-8522 | C 402-241-7377
Christopher.Oehler@chsinc.com | Visit us at chsinc.com

SAFETY DATA SHEET

1. Identification

Product identifier **Crystal Clean 142 Mineral Spirits**

Other means of identification

SDS number 915876

Recommended use Not available.

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Company name	Heritage-Crystal Clean, LLC	
Address	2175 Point Boulevard Suite 375 Elgin, IL 60123-9211	
Telephone	Technical Questions	877-938-7948
Website	www.crystal-clean.com	
E-mail	cc_ehs@crystal-clean.com	
Emergency phone number	Chemtrec	800-424-9300

2. Hazard(s) identification

Physical hazards	Flammable liquids	Category 4
Health hazards	Skin corrosion/irritation	Category 2
	Specific target organ toxicity, single exposure	Category 3 narcotic effects
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 2
	Hazardous to the aquatic environment, long-term hazard	Category 2

OSHA defined hazards Not classified.

Label elements

Signal word Warning

Hazard statement Combustible liquid. Causes skin irritation. May cause drowsiness or dizziness. Toxic to aquatic life. Toxic to aquatic life with long lasting effects.

Precautionary statement

Prevention Keep away from flames and hot surfaces-No smoking. Avoid breathing mist or vapor. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Wear protective gloves/eye protection/face protection.

Response If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse. In case of fire: Use appropriate media for extinction. Collect spillage.

Storage Store in a well-ventilated place. Keep container tightly closed. Store in a well-ventilated place. Keep cool. Store locked up.

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC) None known.

Supplemental information

Not applicable.

3. Composition/information on ingredients

Substances

Chemical name	Common name and synonyms	CAS number	%
Distillates (petroleum), hydrotreated light		64742-47-8	100

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Inhalation Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact Remove contaminated clothing. Wash off with soap and plenty of water. If skin irritation occurs: Get medical advice/attention.

Eye contact Rinse with water. Get medical attention if irritation develops and persists.

Ingestion Rinse mouth. Call a POISON CENTER or doctor/physician if you feel unwell.

Most important symptoms/effects, acute and delayed Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea. Irritant effects.

Indication of immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically.

General information Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media Water fog. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical The product is combustible, and heating may generate vapors which may form explosive vapor/air mixtures.

Special protective equipment and precautions for firefighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions Move containers from fire area if you can do so without risk.

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials. Use water spray to cool unopened containers.

General fire hazards Combustible liquid.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Wear appropriate personal protective equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills in original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling
Keep away from open flames, hot surfaces and sources of ignition. When using do not smoke. Avoid breathing mist or vapor. Avoid contact with skin. Avoid contact with eyes. Use only in well-ventilated areas. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities
Store locked up. Keep away from heat and sources of ignition. Keep container tightly closed. Store in a well-ventilated place.

8. Exposure controls/personal protection

Occupational exposure limits

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Distillates (petroleum), hydrotreated light (CAS 64742-47-8)	TWA	100 mg/m3

Biological limit values
No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls
Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

Eye/face protection
Wear eye/face protection. Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection
Wear protective gloves.

Other
Wear appropriate chemical resistant clothing.

Respiratory protection
When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Thermal hazards
Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations
When using do not smoke. Keep away from food and drink. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance

Physical state
Liquid.

Form
Liquid.

Color
Clear to light blue.

Odor
Hydrocarbon.

Odor threshold
Not available.

pH
Not available.

Melting point/freezing point
Not available.

Initial boiling point and boiling range
> 366.8 °F (> 186 °C)

Flash point
> 142.0 °F (> 61.1 °C) Tag Closed Cup

Evaporation rate
Not available.

Flammability (solid, gas)
Not available.

Upper/lower flammability or explosive limits

Explosive limit - lower (%)
1

Explosive limit - upper (%)
6

Vapor pressure
< 1 mm Hg @ 20 C, 68 F

Vapor density
> 1

Relative density
0.78 - 0.81

Solubility(ies)

Solubility (water)
Not available.

Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	> 440 °F (> 226.67 °C)
Decomposition temperature	Not available.
Viscosity	1.69 cSt (77 °F (25 °C))
Other information	
Percent volatile	100
VOC (Weight %)	100 %

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Heat, flames and sparks. Avoid temperatures exceeding the flash point.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Vapors have a narcotic effect and may cause headache, fatigue, dizziness and nausea.
Skin contact	Causes skin irritation.
Eye contact	Based on available data, the classification criteria are not met.
Ingestion	Based on available data, the classification criteria are not met.
Symptoms related to the physical, chemical and toxicological characteristics	Irritant effects. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

Information on toxicological effects

Acute toxicity

Components	Species	Test Results
Distillates (petroleum), hydrotreated light (CAS 64742-47-8)		
Acute		
Dermal		
LD50	Rabbit	> 2000 mg/kg
Inhalation		
LC50	Rat	> 5.28 mg/l, 4 hours
Oral		
LD50	Rat	> 5000 mg/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation	Causes skin irritation.
Serious eye damage/eye irritation	Based on available data, the classification criteria are not met.
Respiratory or skin sensitization	
Respiratory sensitization	Due to lack of data the classification is not possible.
Skin sensitization	Due to lack of data the classification is not possible.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Reproductive toxicity	Due to lack of data the classification is not possible.

Specific target organ toxicity - single exposure	Narcotic effects.
Specific target organ toxicity - repeated exposure	Based on available data, the classification criteria are not met.
Aspiration hazard	Due to lack of data the classification is not possible.
Chronic effects	Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity	Toxic to aquatic life with long lasting effects. Accumulation in aquatic organisms is expected.
Persistence and degradability	No data is available on the degradability of this product.
Bioaccumulative potential	No data available for this product.
Mobility in soil	Not available.
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions	Do not allow this material to drain into sewers/water supplies. Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Dispose in accordance with applicable federal, state, and local regulations. Return the empty cylinder to the supplier.

14. Transport information

DOT

Not regulated as dangerous goods.

DOT BULK

BULK

UN number	UN1268
UN proper shipping name	Petroleum distillates, n.o.s. (Distillates (petroleum), hydrotreated light)
Transport hazard class(es)	
Class	3
Label(s)	3
Packing group	III
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling. Read safety instructions, SDS and emergency procedures before handling.
Special provisions	144, B1, IB3, T4, TP1, TP29
Packaging exceptions	150
Packaging non bulk	203
Packaging bulk	242

IATA

UN number	UN1268
UN proper shipping name	Petroleum Distillates, n.o.s. (Distillates (petroleum), hydrotreated light)
Transport hazard class(es)	
Class	3
Subsidiary risk	-
Packing group	III
Environmental hazards	Yes
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling. Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number	UN1268
UN proper shipping name	Petroleum Distillates, n.o.s. (Distillates (petroleum), hydrotreated light)
Transport hazard class(es)	
Class	3
Subsidiary risk	-

Packing group	III
Environmental hazards	
Marine pollutant	No.
EmS	Not available.
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling. Read safety instructions, SDS and emergency procedures before handling.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not available.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - Yes
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations

US. Massachusetts RTK - Substance List

Distillates (petroleum), hydrotreated light (CAS 64742-47-8)

US. New Jersey Worker and Community Right-to-Know Act

Distillates (petroleum), hydrotreated light (CAS 64742-47-8)

US. Pennsylvania Worker and Community Right-to-Know Law

Distillates (petroleum), hydrotreated light (CAS 64742-47-8)

US. Rhode Island RTK

Not regulated.

US. California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No

Country(s) or region	Inventory name	On inventory (yes/no)*
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 22-January-2014

Revision date 11-February-2015

Version # 02

HMIS® ratings Health: 1
Flammability: 2
Physical hazard: 0

NFPA ratings

Disclaimer The information in the sheet was written based on the best knowledge and experience currently available.

Green, Pete

From: Duncan, Scott <Scott.Duncan@chsinc.com>
Sent: Thursday, August 18, 2016 2:55 PM
To: Desiree McCaslen (dmccaslen@sioux-city.org)
Cc: Oehler, Christopher
Subject: Solids to WWTP

Hi Desiree,
We had a small process upset this afternoon involving approximately 420 gallons of waste water with approximately 500lbs of solids. Most of this we were able to contain and capture. I would feel comfortable in saying only a quarter of that made its way down the drain and that is probably quite a stretch on the high side with 131# solids.

Scott Duncan
EHS Coordinator
CHS
Processing & Food Ingredients

scott.duncan@chsinc.com
Direct: 402-404-8515
Cell: 260-410-7995
Fax: 402-404-8576

395 164th Street, South Sioux City, NE 68776
Visit us at chsinc.com

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Green, Pete

From: Duncan, Scott <Scott.Duncan@chsinc.com>
Sent: Friday, August 19, 2016 1:29 PM
To: Desiree McCaslen (dmccaslen@sioux-city.org)
Cc: Oehler, Christopher; Drewa, Jacob; Mendes, Christopher
Subject: Solids to drain

Desiree,
The plant experienced a process upset this afternoon. At approximately 12:30-12:45 900 gallons containing 17% solids went to the drain.

Scott Duncan
EHS Coordinator
CHS
Processing & Food Ingredients

scott.duncan@chsinc.com
Direct: 402-404-8515
Cell: 260-410-7995
Fax: 402-404-8576

395 164th Street, South Sioux City, NE 68776
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Green, Pete

From: Duncan, Scott <Scott.Duncan@chsinc.com>
Sent: Friday, August 19, 2016 3:22 PM
To: Desiree McCaslen (dmccaslen@sioux-city.org)
Cc: Oehler, Christopher
Subject: Solids to WWTP

Desiree,
We had a second process upset this afternoon around 2:50pm almost identical to the one earlier in the day, resulting in another 900lbs of liquid going to the drain, of this approx. 17% were solids.

Scott Duncan
EHS Coordinator
CHS
Processing & Food Ingredients

scott.duncan@chsinc.com
Direct: 402-404-8515
Cell: 260-410-7995
Fax: 402-404-8576

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Visit us at chsinc.com

Green, Pete

From: Duncan, Scott <Scott.Duncan@chsinc.com>
Sent: Tuesday, August 30, 2016 10:49 AM
To: Desiree McCaslen; Tom Pingel
Cc: Mendes, Christopher; Oehler, Christopher
Subject: RE: Solids to drain

Hi Desiree,

We are unaware of when Big Ox will start taking water. At this time it would only be a guess but after Labor Day. Also Chris mentioned something about you guys looking for softener resin. Maintenance looked to see if it could have come from us. Your resin issue doesn't appear to be from us.

Scott Duncan
EHS Coordinator
CHS
Processing & Food Ingredients

scott.duncan@chsinc.com
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Cell: 260-410-7995
Fax: 402-404-8576

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From: Desiree McCaslen [mailto:dmccaslen@sioux-city.org]
Sent: Tuesday, August 30, 2016 8:33 AM
To: Duncan, Scott <Scott.Duncan@chsinc.com>; Tom Pingel <TPINGEL@sioux-city.org>
Cc: Mendes, Christopher <Christopher.Mendes@chsinc.com>; Oehler, Christopher <Christopher.Oehler@chsinc.com>
Subject: Re: Solids to drain

Thank you for letting us know.

Any word from Big Ox?

Desiree McCaslen
Pretreatment Manager
Office: (712)-279-6987
Cell: (712)-898-6793
Fax: (712)-279-6191

>>> "Duncan, Scott" <Scott.Duncan@chsinc.com> 8/30/2016 8:30 AM >>>
Morning,
It was just brought to my attention that around 11:00 pm last night operators ended up dumped 850 gallons to the drain. This contained approximately 1250# of solids. Sorry for the late notice.

Scott Duncan
EHS Coordinator
CHS
Processing & Food Ingredients

scott.duncan@chsinc.com
Direct: 402-404-8515
Cell: 260-410-7995
Fax: 402-404-8576

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Green, Pete

From: Bob Livermore <BLivermore@southsiouxcity.org>
Sent: Monday, September 19, 2016 2:40 PM
To: Desiree McCaslen; Lance Hedquist
Subject: CHS

I had a fairly lengthy talk with Chris. He says they have not changed any process including pH adjustment. He says their production cycles are not weekly and they have shut down during the middle of the week as well as weekends. He also stated that when they do clean up, the pH approaches 10. He said they are still under the assumption that after they get switched over that they were told by BOE that they could discharge it all un-neutralized.
He also said the BOE said that they would be using the SSC rate the day that it started to them. That BOE had in their budget to cover the difference.
Chris said he was given a list of phone numbers from BOE and they don't work, no one answers, no one returns call.

Robert (Bob) Livermore
South Sioux City Public Works Director
blivermore@southsiouxcity.org
Office: 402-494-7534
Cell: 712-301-8880

Green, Pete

From: Duncan, Scott <Scott.Duncan@chsinc.com>
Sent: Sunday, October 02, 2016 7:18 PM
To: Oehler, Christopher; Mendes, Christopher; Ron Harnack; Mike Nelson; Desiree McCaslen; Tom Pingel; Robet Livermore
Subject: Solids to drain

Hello,
We had approximately 20,000 pounds of water containing roughly 600 pounds of solids go to the drain. There maybe some more in the next half hour. I will follow up when I know for sure.

Scott Duncan
EHS Coordinator

Sent from my Verizon 4G LTE Droid

Green, Pete

From: Duncan, Scott <Scott.Duncan@chsinc.com>
Sent: Sunday, October 02, 2016 7:23 PM
To: Duncan, Scott
Cc: Desiree McCaslen; Mike Nelson; Mendes, Christopher; Oehler, Christopher; Ron Harnack; Robet Livermore; Tom Pingel
Subject: Re: Solids to drain

There was an additional 8000 pounds containing 8% (640#) solids. That should be all.

Scott Duncan
EHS Coordinator

Sent from my Verizon 4G LTE Droid
On Oct 2, 2016 7:17 PM, "Duncan, Scott" <Scott.Duncan@chsinc.com> wrote:

> Hello,
> We had approximately 20,000 pounds of water containing roughly 600 pounds of solids go to the drain. There maybe some more in the next half hour. I will follow up when I know for sure.
>
> Scott Duncan
> EHS Coordinator
>
> *Sent from my Verizon 4G LTE Droid*

Tonight at 1:00 we had an issue with PAS-6300 that sent 990 gallons of product to drain, this is approximately 1350 LBS of dry solids.

Shane Meacham
Production Supervisor
[redacted] D

CHS Inc.
395 164th Street PO Box 894 | South Sioux City, NE 68776
P 402-404-8520 | C 712-223-4571 | F 402-404-8501
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Green, Pete

From: MacClure, Jeremy <Jeremy.MacClure@chsinc.com>
Sent: Monday, November 28, 2016 10:14 AM
To: Desiree McCaslen; Oehler, Christopher
Subject: RE: Wastewater/Slug Load

Good morning. Would it be possible to move this to 10 or 11 am that day?

Jeremy MacClure
Plant Engineer
CHS Processing and Food Ingredients
395 164th St., South Sioux City, NE 68776
P 402-404-8547 | C 319-389-6588
Jeremy.MacClure@chsinc.com

-----Original Appointment-----
From: Desiree McCaslen [mailto:dmccaslen@sioux-city.org]
Sent: Monday, November 28, 2016 9:44 AM
To: Oehler, Christopher; MacClure, Jeremy
Subject: Wastewater/Slug Load
When: Friday, December 02, 2016 1:00 PM-2:00 PM (UTC-06:00) Central Time (US & Canada).
Where: CHS

Item Type: Appointment
Start Date: Friday, 2 Dec 2016, 01:00:00pm (Central Standard Time)
Duration: 1 Hour
Place: CHS

Desiree McCaslen
Pretreatment Manager
Office: (712)-279-6987
Cell: (712)-898-6793
Fax: (712)-279-6191

Good afternoon,

Due to a change in our production schedule, we will not be in production or CIP mode from January 14 6 am through January 29 at 6 am. We will be doing some cleaning and running the boilers to heat water, etc. You will see a very reduced rate of flow and most of which will be condensate. I do not expect very much loading. Please let me know if you have questions. Have a good evening.

Chris Oehler
Plant Manager

D

395 164th Street PO Box 894 | South Sioux City, NE 68776
P 402-404-8522 | C 402-241-7377
Christopher.Oehler@chsinc.com | Visit us at chsinc.com

From: Desiree McCaslen [mailto:dmccaslen@sioux-city.org]
Sent: Tuesday, January 03, 2017 4:58 PM
To: Brian Goeden <bgoeden@beefproducts.com>; csales@beefproducts.com; Jason Osbahr <JOsbahr@bigoxenergy.com>; Perry Winkler <PWinkler@bigoxenergy.com>; Oehler, Christopher <Christopher.Oehler@chsinc.com>; Duncan, Scott <Scott.Duncan@chsinc.com>; dan.stucky@richardson.ca; Darin Jensen <Darin.Jensen@richardson.ca>; blivermore@southsiouxcity.org; LHedquist@southsiouxcity.org
Subject: Meeting Minutes

Gentlemen-

Thank you for your time today. I have attached the meeting minutes. Please review them and make sure that the information I have for each of your contact information is correct.

Jason, I need to know if the phone number I have listed for a facility contact is correct and if an email is available for the contact person for spill/slug reporting.

Thank you so much for your time today.

Dez

Desiree McCaslen
Pretreatment Manager
Office: (712)-279-6987
Cell: (712)-898-6793
Fax: (712)-279-6191

Green, Pete

From: Duncan, Scott <Scott.Duncan@chsinc.com>
Sent: Monday, January 30, 2017 11:20 AM
To: George Hoyos (GHoyes@bigoxenergy.com); Jason Osbahr (JOsbahr@bigoxenergy.com); Desiree McCaslen (dmccaslen@sioux-city.org); Tom Pingel; Robert Livermore (blivermore@southsiouxcity.org)
Cc: MacClure, Jeremy; Oehler, Christopher
Subject: High pH waste water

Hello,
We discovered an issue with the HCL pump used in balancing waste water pH. From approximately 11am yesterday morning until shortly after midnight we had waste water with a high pH leave the plant. Shortly after midnight the situation resolved and normal pH was restored on waste water. Flows during this period averaged a bit under 8,000 gallons an hour. As of 1am waste water has been running in the 6-7 range. We are looking at placing some additional controls in place to prevent a re-occurrence.

Sincerely,

Scott Duncan
EHS Coordinator
CHS
Processing & Food Ingredients

scott.duncan@chsinc.com
Direct: 402-404-8515
Cell: 260-410-7995
Fax: 402-404-8576

395 164th Street, South Sioux City, NE 68776
Visit us at chsinc.com

Good Morning Jason,
In response to your email sent yesterday, the attachments will give you an idea of what you have already received. As Scott describes below, we had issues with pH control for a period of time yesterday, ending around 1 am this morning. Production actually started around 3 am this morning. Now that we are in production mode you should be receiving water in the 5.5-6.5 pH range at about 15-20,000 gph. The production run is scheduled to conclude early Friday morning. We will then transition to CIP mode. The CIP you will receive will contain higher loading than the CIP cycle just completed in that we will be cleaning solids from the equipment vs. simply cleaning a previously clean surface.

Please let me know if you have questions. Have a good day.

Chris Oehler
Plant Manager

D

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Sent: Monday, January 30, 2017 11:20 AM
To: George Hoyos (GHoyes@bigoxenergy.com) <GHoyes@bigoxenergy.com>; Jason Osbahr (JOsbahr@bigoxenergy.com) <JOsbahr@bigoxenergy.com>; Desiree McCaslen (dmccaslen@sioux-city.org) <dmccaslen@sioux-city.org>; Tom Pingel <TPINGEL@sioux-city.org>; Robert Livermore (blivermore@southsiouxcity.org) <blivermore@southsiouxcity.org>
Cc: MacClure, Jeremy <Jeremy.MacClure@chsinc.com>; Oehler, Christopher <Christopher.Oehler@chsinc.com>
Subject: High pH waste water

Hello,
We discovered an issue with the HCL pump used in balancing waste water pH. From approximately 11am yesterday morning until shortly after midnight we had waste water with a high pH leave the plant. Shortly after midnight the situation resolved and normal pH was restored on waste water. Flows during this period averaged a bit under 8,000 gallons an hour. As of 1am waste water has been running in the 6-7 range. We are looking at placing some additional controls in place to prevent a re-occurrence.

Sincerely,

Scott Duncan
EHS Coordinator
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scott.duncan@chsinc.com
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Fax: 402-404-8576

395 164th Street, South Sioux City, NE 68776
Visit us at chsinc.com

Farmer-owned with global connections

Green, Pete

From: Desiree McCaslen <dmccaslen@sioux-city.org>
Sent: Monday, January 30, 2017 12:13 PM
To: Green, Pete; Tipton, Lantz
Subject: CHS
Attachments: Solids to WWTP; Solids to drain; Solids to WWTP; ATT00001.htm; removed.txt; RE: Solids to drain; CHS; Solids to drain; Re: Solids to drain; ATT00002.htm; removed.txt; RE: Wastewater/Slug Load; ATT00003.htm; removed.txt; High pH waste water; ATT00004.htm; removed.txt; Effluent Hourly Data was executed at 1/28/2017 12:01:07 AM; Effluent Hourly Data was executed at 1/29/2017 12:01:08 AM; Effluent Hourly Data was executed at 1/30/2017 12:01:07 AM

We have met with CHS twice about these slug loads, once prior to them discharging to Big Ox and once on December 2, 2015.

I left Pete a voice mail that they also had a significant issue with pH during their start up yesterday and were in violation of their discharge permit. They are reporting "average" hourly pH readings of 12.51 s.u.

I will be requesting the additional monitoring information for review and enforcement action.

Thanks.

Dez

Desiree McCaslen
Pretreatment Manager
Office: (712)-279-6987
Cell: (712)-898-6793
Fax: (712)-279-6191

Green, Pete

From: Desiree McCaslen <dmccaslen@sioux-city.org>
Sent: Friday, February 03, 2017 7:20 AM
To: Green, Pete
Subject: Fwd: Solids to the drain

Another slug load from CHS last night. Thanks.

Desiree McCaslen
Pretreatment Manager
Office: (712)-279-6987
Cell: (712)-898-6793
Fax: (712)-279-6191

>>> "Duncan, Scott" <Scott.Duncan@chsinc.com> 2/3/2017 7:11 AM >>>
Good morning Perry,
Here's follow up email to our conversation this morning. We had a process upset this morning when an operator was adding anti-foam to a tank. The lid fell and knocked the container of anti-foam out of his hand into the tank. As a result of this we had to drain the tank. This resulted in about 3,970lbs of product going to the drain. Of this approximately 15.5% or roughly 615lbs were solids.

Sincerely,

Scott Duncan
EHS Coordinator
CHS
Processing & Food Ingredients

scott.duncan@chsinc.com
Direct: 402-404-8515
Cell: 260-410-7995
Fax: 402-404-8576

395 164th Street, South Sioux City, NE 68776
Visit us at chsinc.com

ATTACHMENT 6

CHS, Inc.

South Sioux City, Nebraska

Industrial User Inspection

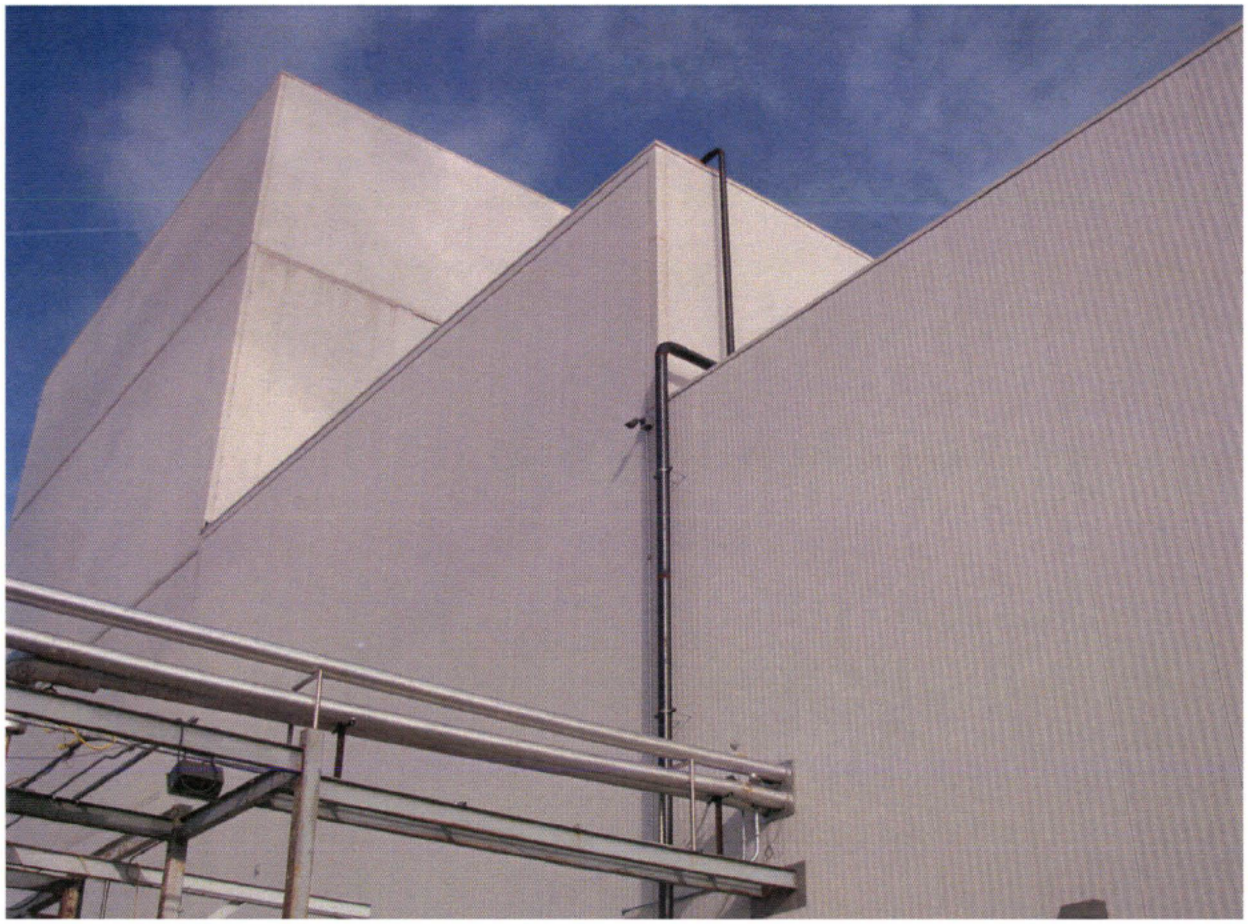
Photos taken by Pete Green

EPA Region VII

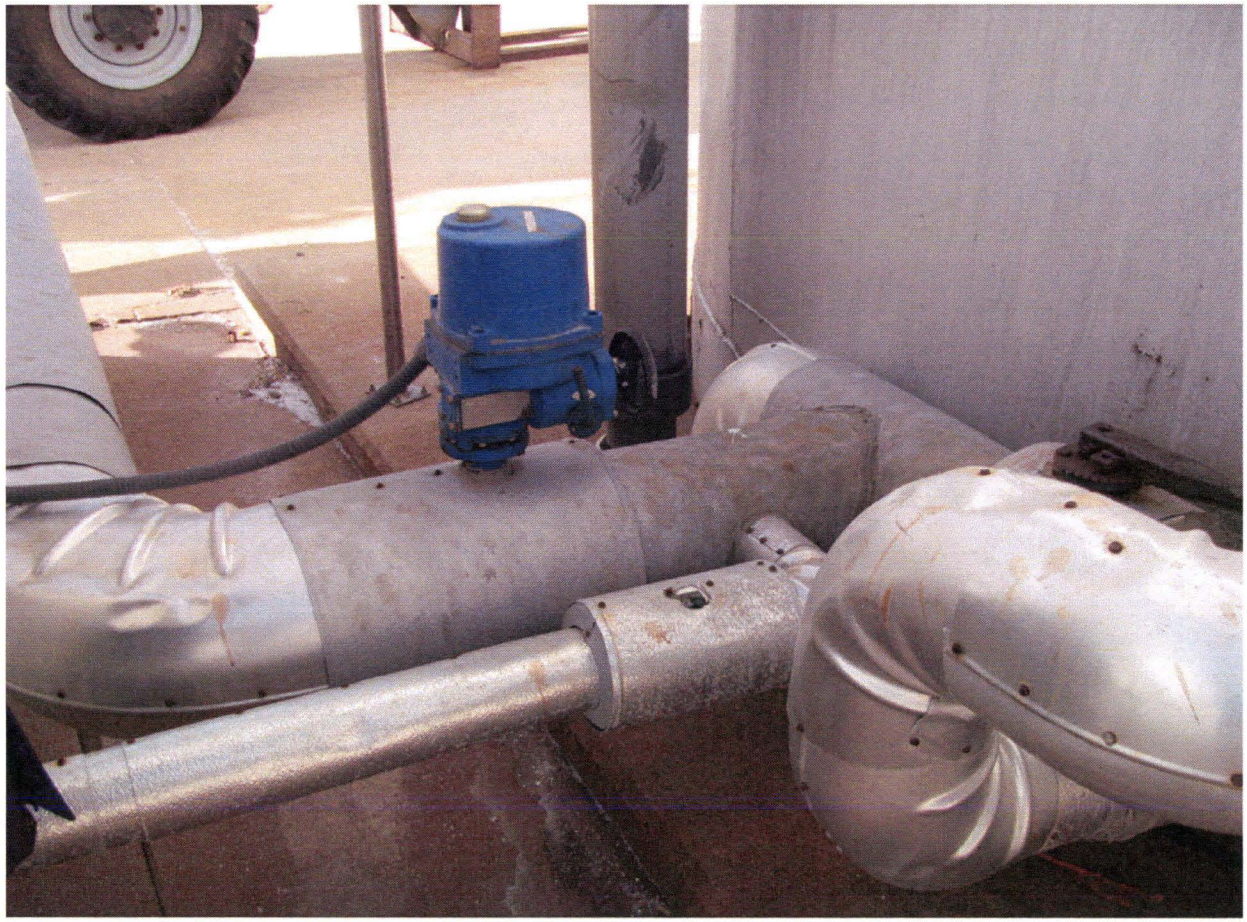
January 11, 2017

1. CHS Facility; Loadout area for okara (a solid byproduct) (W)

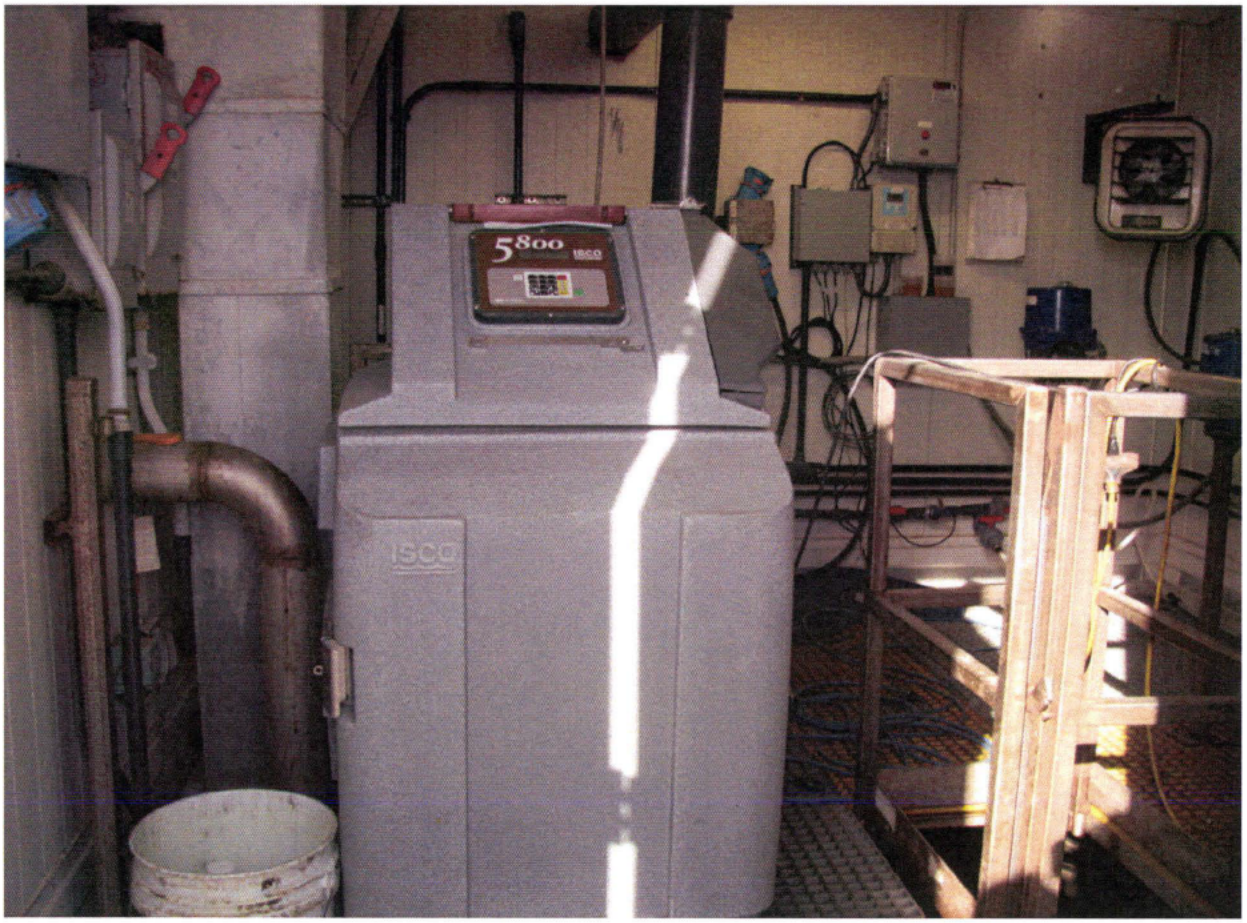
2. Second tanker being loaded (W)



3. Closed circuit camera used to monitor okara loadout operations (NW).



4. "Kidney loop" on pH neutralization tank, with newly-installed insulation to prevent freezing (SSW).



5. CHS; Refrigerated automatic composite sampler (W)

General Information:

Date of Issue: April 14, 2014

Expiration Date: April 13, 2017

TSS Amendment Date: April 1, 2015

Renewal Application Date: January 14, 2017

Standard Industrial Classification Code: 2075-Soybean oil mill/soybean protein isolate

Effluent Discharge Limitations:

Parameter	Daily Maximum	Monthly Average shall not exceed
TSS	N/A	700 lbs/day
pH	5.0-11.5 s.u	5.0-11.5 s.u.
Amended TSS	N/A	N/A

The Permit has been issued based on the information provided on your Permit Application and/or surveillance by Utilities representatives. A new discharge permit may be required if the characteristics of the water indicated on this permit change.

A renewal permit application must be submitted no later than 90 days prior to the above expiration date, if permittee wishes to continue discharging after said date.

By: Dorine McCarden

Issued this 1st (Day) of April (Month) 2015 (Year)

SIOUX CITY

April 1, 2015

To: All Permitted Significant Industrial Users

RE: Wastewater Discharge Permit Amendment

On February 17, 2015 the City of Sioux City submitted a pretreatment program modification request to the IDNR for the removal of TSS limits from wastewater discharge permits based on source identification and control. The Wastewater Treatment Plant (WWTP) influent average loading for TSS has been less than 80% of the influent design since May 1, 2013 (22 months). This is a reflection of the time and investments made by City staff and the industrial community to control pollutants discharging.

The Pretreatment Department also issued an additional 6 wastewater discharge permits in 2014 to contributors identified through collection system sampling. These facilities have also modified or invested in additional pretreatment technologies to aide in the control of pollutants discharging. The department is currently working on the sampling of 7 additional contributors for the determination of permit applicability.

Based on the EPA Local Limits Guidance Document conventional pollutants that do not exceed 80% of the treatment facilities influent design capacity during a rolling 12 month period, do not have to be controlled through local limits. Effective April 1, 2015 the City of Sioux City has removed Monthly Average TSS limits from all wastewater discharge permits. An amended permit is included to reflect this program modification. Please be advised that if TSS is a requirement of an issued Categorical Regulation these limits still remain in place. An updated Standard Conditions for Discharge is also included as some additional enforcement language was added to support the program modifications.

It should be advised that if the influent average TSS loading is greater than 80% at any point in the future that the City may have to re-issue Monthly Average TSS limits. To prevent this from happening it is in the best interest of the entire Permitted Industrial User group to be proactive in process monitoring and self-policing. The implementation of "best management practices" (BMP's), establishing the appropriate maintenance and monitoring of all applicable pretreatment equipment will ensure future success of the program.

The department has also recently developed and implemented a Fats, Oil and Grease program for the Siouxland Community. The program will require that all control mechanisms for the capture of

grease are cleaned out on a more frequent basis, establishes BMP's and allows for the issuance of fines/penalties for non-compliance. Staff is confident that this program will also demonstrate reductions in influent loading to the WWTP.

The Pretreatment Department will keep the group apprised monthly of the influent average and if any contributor is close, or over their previously issued TSS limit a separate email shall be sent to document the concern. Your cooperation and due diligence in continued control of pollutants discharging is appreciated. Please let me know if you have any questions regarding the permit amendment or anything else.

Sincerely,

Desiree McCaslen
Pretreatment Manager, City of Sioux City

THE CITY OF SIOUX CITY, IOWA WWTP

Standard Permit Conditions for Signigicant Industrial Users
to Discharge Wastewater into the Sanitary Sewer System

The conditions contained herein are considered part of the permittee's requirements and any violation of the conditions herein will be evaluated and the appropriate enforcement action will be applicable. Situations of continued non-compliance shall result in escilation of enforcement action(s).

General Conditions:

1. The discharge of process waters into the sanitary sewer system for the purpose of treating the same at the City's WWTP shall be allowed by permit only for waters whose chemical and physical characteristics meet the requirements of the City. Application for such permit shall be made in the form of "Wastewater Discharge Permit Application", prescribed to the City of Sioux City Pretreatment Office. Such permits shall be issued for a limited period at the sole discretion of the Director of the Utilities Department or his/her authorized representatives and upon such terms and conditions as the Director shall deem to be in the best interest of the City. Applications must be filed 90 days prior to the experation of said permit or prior to the requested discharge.

2. The Director may at any time modify said permit for reasons including but not limited to:
    a. Incorparation of new or revised Federal, State or local water quality/pretreatment standards or requirements,
    b. Changes to the permitees operation that affect the integrity of the water quality discharging at the time of permit issuance, or
    c. Upon request of the permittee to accommodate:
        i. Permit transfer to new owner/operator,
        ii. Permit modification, or
        iii. Permit termination

3. The permittee may petition to appeal the terms of this permit within thirty (30) days of the notice:
    a. Failure to submit a petition for review shall waiver the right to appeal.
    b. the permittee must indicate the reasons for the objection, and the alternative condition, if any, it seeks to be placed in the objection.

    The effectiveness of this permit shall not be stayed pending reconsideration by the Director. If reconsideration is appropriate said permit shall be reissued by the Director. If reconsideration is denied the decision shall be considered final administrative action for purpose of judicial review.

4. If pretreatment of the wastes by the permit holder are required for the permit holder's wastes to meet requirements of the City for discharge into the sanitary sewer system, or if the facility is found in non-cmpliance any issued permit limit, the permit holder shall be responsible to design and construct such pretreatment facilities prior to any such discharge being initiated. Said pretreatment facilities shall comply with all City, State and Federal regulatory requirements. The discharge must continuously meet or exceed the quality required by permit conditions, City sewer use ordinances, state and federal categorical standards. Should the permittee fail to meet such requirements, the Director may request that the discharge cease and be retained by the permit holder until pre-treatment by the permit holder results in meeting such requirements.

5. The permittee shall operate and maintain all facilities and systems of treatment and control, and related equipment which are installed or used to achieve compliance with the conditions of this permit. Proper operation and maintenance includes, but is not limited to effective performance, adequate funding, adequate operator staffing and training, and adequate process controls, including appropriate back-up or auxiliary facilities or similar systems, when necessary to achieve compliance with the conditions of the permit. During loss or failure of all or part of the pretreatment facility, the permittee shall:
    a. Notify the Pretreament Office immediate to the extent of the process inhibition and the corrective actions taking place to rectify the situation,
    b. Institute control where necessary to maintain compliance with its permit,
    c. Control its production or discharges or both until operation of the pretreatment facility is restored, or
    d. Find an alternative method of treatment is provided.

6. The route, from discharge point to sewage treatment plant, will be analyzed by the City for available capacity. This analysis may be used to establish: 1) allowable rates of discharge, 2) time(s) of day for such discharge, and, 3) wet weather flow curtailments for the permit holder's discharge. Periodic sewer system capacity checks will be made by the City and volumes/rates and time of day schedules for the permit holder may be adjusted by the City thereafter. The permit holder must comply with the latest volume/rate, time of day schedule provided by the City. Further, the City, at the sole discretion of the Director, may order the alteration or temporary suspension of ground/surface water discharges if wet weather or other conditions cause the sanitary sewer system to become overtaxed or surcharged. The permit holder must comply with such orders. In consideration of the foregoing, it is the permit holder's responsibility to provide flow retention facilities with adequate capacity for containing the permit holder's discharge(s) during periods of time when the City curtails the discharge(s) to the sanitary sewer system.

7. The permittee shall notify the Pretreatment Office prior to any changes within the operation of the facility that impact the volume, concnetration or nature of the discharge, unless otherwise not feasible due to an emergency. This includes but is not limited to facility shut down for maintenance/repair, seasonal variations due to product demand, modifications to the current pretreatment system, and/or any non-routine dischage that may be considered a Slug Discharge.

8. In the event that a spill or slug discharge occurs and the pollutant of concern has entered the sanitary sewer immediate notification to the Pretreatment Department 712-898-6793 and to the WWTP on call Operator 712-202-3160 is required. The notification will need to include the pollutant released, the volume and any known hazards. A written explination of the event will need to be submitted to the Pretreatment Department within 24 hours.

9. The permittee is responsible for the evaluation and implimentation of BMPs related to Slug Discharge Control, seperately or in combination with a Slug Control Plan. These BMPs are intended to prevent pollutants from entering the discharge wastestream or from reaching a discharge point. They include but are not limited to:
    a. Preventative Maintenance to identify and correct equipment leaks or manfulctions
    b. Operating Procedures to prevent and control runoff, spills and waste disposal
    c. Process Monitoring including loss/yield calculations
    d. Spill Response Plan
    e. Employee training
    f. Spill Control and housekeeping procedures for chemical storage areas and secondary containment

10. In the event that the City is unable to perform the required permit compliance monitoring and reporting as listed in 40 CFR 403 than it shall be the permittee's responsibility to complete this according to the approved program frequency.

11. Sampling and shall be completed in accordance with 40 CFR 136 at a sampling location mutally agreed upon by the City and the permittee. If multiple effluent outfalls exist than samples will need to evaluated

simultaneioulsy at all appropriate discharge locations during a sampling event. Repeat sampling for a non-compliant sampling event must be completed within 30 days of becoming aware of a violation.

a. Samples frequency for permitted industrial users discharging more than 25,000 gpd
    i. Once per week for TSS, BOD and FOG
    ii. Once per month for pH
b. Sample frequency for permitted industrial users discharging less than 25,000 gpd
    i. Once per month for TSS, BOD, FOG, and pH
c. Sample frequency for permitted categorical dischargers
    i. Once biannually for the regulated pollutants pertaining to the identified categorical process, unless otherwise required by the regulation

12. The Pretratment Office is located at 3100 S. Lewis Blvd, Sioux City, IA 51106. The fax number is 712-279-6916. For emergencies please call the operations staff at 712-202-3160.

Prohabition and Enforcement:

1. Sampling and reporting shall be conducted as specified in 40 CFR 403 and in accordance with the City's approved pretreatment program.
    a. Permitted industries discharging more than 25,000 GPD shall be sampled once per week, unless otherwise requested by the industry or required based on historical discharge data.
    b. Permitted industries discharging less than 25,000 GPD shall be sampled once per month, unless otherwise requested by the industry or required based on historical discharge data.
    c. All samples shall be collected using 24-hour composite sampling methodology.
    d. For the purposes of this permit the City has agreed to undertake the sampling and reporting, in the event that the City is not capable or able to complete this requirement it is the responsibility of the permittee to complete this in accordance with 40 CFR 136 for the permitted and billable parameters.

2. If applicable, to determine the total amount and rate of flow for each discharge, the permit holder shall install, at its own expense, a flow measuring device which shall record total daily and monthly flow, maximum hourly flow, and time of day of all such flows. Said flow measuring device(s) shall be acceptable to the City and accessible for inspection by the City. Additionally, the devices shall be maintained in accordance with manufacturer's recommendations and calibrations of said devices shall be performed on a schedule provided by the City, all at the permit holder's expense. The City, at the sole discretion of the Director, reserves the right to require separate and/or redundant metering devices for certain discharges.

3. The permittee is prohibited from increasing the use of potable or process water or in any way attempting to dilute an effluent as a partial or complete substitute for adequate tratment to achieve compliance with the effluent discharge limitations set forth in this permit.

4. Bypass is prohibited unless it is unavoidable to prevent loss of life, personal injury, severe property damaage, or no feasible alternative exists. In the event of a bypass the permittee is shall notify the Pretreatment Office as soon as possible:
    a. Advance notice, in writing, shall be submitted to the Pretreatment Office at least ten (10) days prior to the proposed bypass,
    b. An unanticipated or accidental bypass shall be reported immediately to the WWTP operations staff at 712-203-3160 and formal notification made to the Pretreatment Office via phone 712-898-6793 and email or fax including the following:
        i. Description of the bypass, its cause, duration, and pollutants of concern,
        ii. Whether or not the bypass has ceased, and
        iii. The steps taken to reduce, elimate and/or prevent the reoccurance of the bypass.

5. In the event that the permit holder is found to be in non-compliance with the ordinances of the City, these regulations or the conditions of its permit, the City will provide notice to the permit holders designated agent. The permit holder will have ten (10) days thereafter to correct noted deficiencies and respond in writing to the Pretreatment Office of the identified nature or cause of the violation and the steps taken to mitigate further vioations of the same natue from occuring. Failure to do so will invalidate the permit and subject the permit holder to civil and criminal prosecution. The ten (10) day period provided for correction of deficiencies does not relieve and/or release the permit holder from any liabilities arising from said non-compliance.

6. Failure to comply with the requirements of this permit may be ground for administrative action or enforcement proceedings including but not limited to civil or criminal penalities, injunctive relief. Failure to comply may also result in the termination of the permit for the following reasons including but not limited too:
    a. Falsifying self-monitoring reports,
    b. Tampering with monitoring equipment,
    c. Refusing to allow timely access to the facility premises and/or records,
    d. Continuous violations of effluent limitations,
    e. Illicite discharge of waste that causes interference or pass through,
    f. Failure to pay fines,
    g. Failure to pay sewer charges, and
    h. Failure to meet compliance schedules.

7. As a condition precedent, the permit holder will agree to hold harmless the City and the City's employees from any liabilities arising from the permit holder's operations under this permit.

Specific Conditions for Categorical Discharges:

1. All categorical discharges are subject to the permitted applicable Federal standard.

2. The permitee is responsible for submitting a Self Monitoring Report to the Pretreatment Office during the months of June and December. This report shall contain the volume of water purschased by the permittee during the 6 month reporting period, the nature and concentration of polluants discharging in the facilities effluent required for monitoring for applicable Categorical Pretreament Standards or as listed in Categorical Industrial User Wastewater Dicharge Permit.

3. Sampling must be conducted by the permittee at an agreed upon sampling location approved by the Director.

4. For Monthly average dicharge limits at least three consecutive days of sampling must be conducted to obtain an "average" reportable data point. All sampling plans must be approved by the Director.

5. All samples must be collected, preserved and submitted to a Certified laboratory in accordance with 40 CFR 136.

Last updated 2.26.2015 per DM.

(S E A L)

EXHIBIT "A"

COMMERCIAL AND INDUSTRIAL SEWAGE RATES

Commercial

Service Charge	$13.53	$23.68
Usage per 1,000 gallons	$ 4.23	$ 7.40

Industrial

Flow Unit per 1,000 gallons	$ 2.86	
Loading costs (per pound)	T55	$0.120 ($/lb.)
	0+G	$0.220 ($/lb.)
	BOD	$0.239 ($/lb.)

Any surcharges or penalties charged by the operator of the wastewater treatment facility will be added to the service charges and flow charges.

RESOLUTION 2016-_____

RESOLUTION AMENDING COMMERCIAL AND INDUSTRIAL SEWAGE RATES.

BE IT RESOLVED BY THE MAYOR AND CITY COUNCIL OF THE CITY OF SOUTH SIOUX CITY, NEBRASKA:

SECTION 1: That Section 114-411(2) of the South Sioux City Municipal Code requires that rates for industrial users be established by resolution;

SECTION 2: That the commercial and industrial sewage rates are amended to set forth the rates shown on Exhibit "A" which is attached hereto and made a part hereof by this reference; and,

SECTION 3: That these rates shall be effective commencing on August 8, 2016.

PASSED AND APPROVED this 8th day of August, 2016.

_____
MAYOR

ATTEST:

_____
CITY CLERK

CHS Effluent Hourly Data

12/15/2016 12:01 AM to 12/16/2016 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	5.98	14,578	0
1	5.72	19,403	0
2	6.39	20,380	0
3	5.78	20,085	0
4	5.99	14,597	0
5	5.82	14,787	0
6	5.82	15,787	0
7	5.85	19,209	0
8	5.74	15,991	0
9	5.92	17,546	0
10	6.43	18,779	0
11	8.70	17,266	0
12	5.73	13,283	0
13	5.84	13,016	0
14	5.71	13,207	0
15	6.03	14,876	0
16	5.79	18,379	0
17	6.07	16,503	0
18	5.79	15,808	0
19	5.59	16,516	0
20	6.76	14,129	0
21	6.14	18,966	0
22	6.11	18,922	0
23	5.90	15,681	0

12/16/2016 12:01:07 AM

CHS Effluent Hourly Data

12/16/2016 12:01 AM to 12/17/2016 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	5.94	18,351	0
1	5.83	18,816	0
2	5.83	18,246	0
3	5.93	16,019	0
4	5.78	16,074	0
5	5.81	17,877	0
6	5.83	17,063	0
7	5.83	19,278	0
8	5.86	20,152	0
9	6.21	21,271	0
10	5.79	20,174	0
11	6.57	18,765	0
12	5.97	15,483	0
13	6.74	15,626	0
14	6.91	16,944	0
15	7.00	17,723	0
16	6.69	18,727	0
17	6.44	16,956	0
18	6.68	15,576	0
19	7.34	16,004	0
20	6.88	17,111	0
21	5.76	16,165	0
22	5.76	17,366	0
23	6.85	17,874	0

12/17/2016 12:01:07 AM

CHS Effluent Hourly Data

12/17/2016 12:01 AM to 12/18/2016 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	6.50	20,138	0
1	5.73	19,350	0
2	7.10	15,356	0
3	5.76	15,024	0
4	7.89	14,836	0
5	6.42	15,565	0
6	6.11	16,882	0
7	6.74	19,181	0
8	5.75	18,450	0
9	6.84	17,998	0
10	6.23	16,077	0
11	7.12	15,932	0
12	6.51	15,652	0
13	6.26	17,839	0
14	6.59	19,841	0
15	6.04	20,428	0
16	6.14	20,302	0
17	6.25	16,922	0
18	6.19	22,979	0
19	9.36	16,465	0
20	11.52	9,062	0
21	11.84	11,878	0
22	11.31	10,345	0
23	12.03	12,864	0

2nd event.

12/18/2016 12:01:11 AM

CHS Effluent Hourly Data

12/14/2016 12:01 AM to 12/15/2016 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	7.65	21,310	0.3
1	7.56	24,367	0
2	7.32	5,632	0
3	7.24	8,587	0
4	6.85	12,549	0
5	5.96	14,188	0
6	5.98	14,672	0
7	5.77	17,645	0
8	5.96	18,059	0
9	5.79	19,182	0
10	5.77	18,988	0
11	5.80	17,114	0
12	5.73	16,573	0
13	5.80	19,270	0
14	5.71	20,472	0
15	5.78	22,353	0
16	5.77	19,212	0
17	5.80	14,625	0
18	5.84	15,841	0
19	5.89	15,150	0
20	5.95	19,296	0
21	6.14	16,159	0
22	5.79	15,469	0
23	5.97	16,558	0

107G

12/15/2016 12:01:12 AM

CHS Effluent Hourly Data

12/13/2016 12:01 AM to 12/14/2016 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	8.83	10,226	0
1	9.16	10,076	0
2	9.12	5,584	0
3	8.76	1,979	0
4	8.85	2,009	0
5	8.69	3,238	0
6	8.97	1,649	0
7	9.39	1,344	0
8	9.42	2,640	0
9	9.41	3,991	0
10	8.62	2,379	0
11	8.73	5,317	0.48
12	8.91	1,090	0
13	8.82	973	0
14	8.81	(6)	17.58
15	8.89	1,349	46.7
16	8.90	78	0
17	9.44	1,532	0
18	10.64	3,011	0
19	9.76	1,615	0
20	12.10	1,769	0
21	11.90	1,399	0
22	9.72	3,266	0
23	9.07	8,842	0

42 G

2 G 1050 G

12/14/2016 12:01:12 AM

CHS Effluent Hourly Data

12/18/2016 12:01 AM to 12/19/2016 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	11.61	9,296	0
1	10.77	10,903	0
2	11.47	10,244	0
3	11.73	11,055	0
4	11.59	10,872	0
5	11.56	10,791	0
6	11.57	10,880	0
7	11.92	12,343	0
8	11.26	10,449	0
9	11.15	11,984	0
10	11.71	7,645	0
11	12.10	7,991	0
12	12.09	4,520	0
13	12.13	9,028	0
14	12.11	4,179	0
15	12.13	7,230	0
16	10.78	6,559	0
17	9.93	3,431	0
18	10.57	2,025	0
19	10.82	2,346	0
20	10.89	3,302	0
21	10.83	3,780	0
22	10.80	1,947	0
23	10.84	2,529	0

12/19/2016 12:01:16 AM

CHS Effluent Hourly Data

12/19/2016 12:01 AM to 12/20/2016 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	10.35	2,484	0
1	11.01	2,327	0
2	10.23	1,840	0
3	10.12	1,805	0
4	9.91	1,749	0
5	9.80	1,936	0
6	9.70	5,490	0
7	8.63	5,699	0
8	8.88	4,578	0
9	8.70	8,903	0
10	9.54	19,994	0.32
11	8.29	18,225	0
12	7.93	6,136	0
13	8.03	3,696	0
14	8.22	1,752	0
15	7.84	11,981	0
16	7.19	16,675	0
17	6.55	13,159	0
18	6.42	15,331	0
19	5.97	14,646	0
20	6.32	16,392	0
21	6.53	17,352	0
22	6.05	19,641	0
23	6.24	19,899	0

12/20/2016 12:01:07 AM

CHS Effluent Hourly Data

12/12/2016 12:01 AM to 12/13/2016 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	4.68	18,340	0
1	4.71	17,145	0
2	4.76	19,324	0
3	4.80	17,082	0
4	5.27	14,507	0
5	5.88	15,959	0
6	6.59	17,960	0
7	6.75	19,899	0
8	6.21	20,225	0
9	5.75	19,844	0
10	5.48	20,033	0
11	7.29	29,612	0
12	9.28	25,328	0
13	8.88	11,605	0
14	9.49	16,762	0
15	9.40	16,389	0
16	8.62	12,626	0
17	9.49	10,364	0
18	9.47	9,136	0
19	9.57	15,361	0
20	9.21	10,343	0
21	9.26	10,625	0
22	9.13	7,576	0
23	8.77	5,400	0

12/13/2016 12:01:04 AM

CHS Effluent Hourly Data

12/11/2016 12:01 AM to 12/12/2016 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	3.96	15,487	0
1	6.46	17,232	0
2	6.88	19,576	0
3	3.43	20,311	0
4	5.80	21,023	0
5	6.38	19,736	0
6	5.44	16,317	0
7	5.42	19,014	0
8	8.82	18,732	0
9	4.07	17,651	0
10	2.04	19,138	0
11	2.33	19,245	0
12	3.32	19,151	0
13	4.19	18,536	0
14	4.73	15,598	0
15	5.03	17,640	0
16	5.16	19,409	0
17	5.04	19,302	0
18	5.00	20,350	0
19	4.74	20,089	0
20	4.63	15,392	0
21	4.57	14,566	0
22	4.57	15,029	0
23	4.60	15,902	0

12/12/2016 12:01:04 AM

CHS Effluent Hourly Data

12/20/2016 12:01 AM to 12/21/2016 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	6.41	10,756	0
1	6.61	15,672	0
2	6.13	14,838	0
3	6.29	15,917	0
4	6.06	16,976	0
5	6.29	17,714	0
6	6.06	18,638	0
7	5.95	18,229	0
8	6.08	10,322	0
9	10.05	6,592	0
10	7.43	15,059	0
11	6.18	19,207	0
12	6.77	18,293	0
13	6.07	15,603	0
14	6.31	18,801	0
15	10.59	19,594	0
16	6.94	17,053	0
17	5.78	12,536	0
18	5.86	17,487	0
19	5.91	17,745	0
20	6.13	17,398	0
21	6.10	16,725	0
22	5.93	15,043	0
23	6.58	19,553	0

12/21/2016 12:01:11 AM

CHS Effluent Hourly Data

12/21/2016 12:01 AM to 12/22/2016 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	6.14	19,122	0
1	6.31	19,369	0
2	8.01	22,726	0
3	7.61	19,927	0
4	6.27	18,892	0
5	5.98	19,944	0
6	6.60	20,182	0
7	6.30	18,463	0
8	5.94	16,015	0
9	5.91	18,669	0
10	6.30	18,732	0
11	6.06	19,668	0
12	5.79	17,692	0
13	6.08	17,203	0
14	6.81	15,167	0
15	6.63	16,229	0
16	6.01	18,731	0
17	6.16	19,163	0
18	5.91	19,596	0
19	6.40	19,812	0
20	5.94	15,674	0
21	6.03	13,585	0
22	6.06	17,054	0
23	8.37	23,659	1.83

12/22/2016 12:01:11 AM

CHS Effluent Hourly Data

12/10/2016 12:01 AM to 12/11/2016 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	5.73	19,305	0
1	5.89	16,671	0
2	6.01	15,689	0
3	6.48	15,308	0
4	6.56	15,605	0
5	6.20	19,383	0
6	6.70	19,099	0
7	6.21	19,174	0
8	6.61	15,474	0
9	6.24	16,414	0
10	5.92	17,043	0
11	6.08	19,881	0
12	6.75	20,942	0
13	5.74	22,164	0
14	6.41	20,464	0
15	5.94	17,349	0
16	4.94	15,573	0
17	6.97	17,589	0
18	3.96	17,721	0
19	8.04	19,203	0
20	4.11	18,140	0
21	8.47	19,099	0
22	5.69	17,356	0
23	7.57	16,312	0

12/11/2016 12:01:11 AM

CHS Effluent Hourly Data

12/9/2016 12:00 AM to 12/10/2016 12:00 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	7.04	17,441	0
1	6.99	19,311	0
2	6.89	20,217	0
3	6.46	7,487	0
4	5.90	12,293	0
5	5.83	14,098	0
6	5.92	18,289	0
7	5.93	20,630	0
8	6.01	20,435	0
9	5.84	18,283	0
10	5.79	16,990	0
11	5.80	16,370	0
12	6.35	13,509	0
13	5.71	15,107	0
14	5.84	17,679	0
15	5.71	18,881	0
16	5.77	19,005	0
17	5.74	16,330	0
18	5.76	17,650	0
19	7.55	8,417	0
20	6.93	16,026	0
21	6.00	18,884	0
22	6.04	19,164	0
23	6.01	19,665	0

1/13/2017 7:46:15 AM

CHS Effluent Hourly Data

12/22/2016 12:01 AM to 12/23/2016 12:01 AM

Last deviation event in Dec.

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	10.35	24,738	0
1	11.59	12,654	0
2	12.53	8,672	0
3	11.72	13,637	0
4	12.46	11,904	0
5	10.40	20,180	0
6	8.58	13,042	0
7	8.14	5,565	0
8	8.27	9,841	0
9	8.21	12,667	0
10	8.88	15,679	0
11	7.63	10,691	0
12	6.29	15,524	0
13	7.32	13,400	0
14	8.53	13,806	0
15	7.90	10,299	0
16	6.43	4,550	0
17	7.25	10,192	0
18	8.60	8,153	0
19	7.61	7,004	0
20	8.08	8,346	0
21	8.12	8,627	0
22	9.43	5,427	0
23	7.52	7,968	0

12/23/2016 12:01:04 AM

CHS Effluent Hourly Data

12/23/2016 12:01 AM to 12/24/2016 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	7.34	2,976	0
1	8.12	7,218	0
2	8.17	6,670	0
3	7.55	4,034	0
4	7.71	7,696	0
5	7.78	5,168	0
6	7.44	5,737	0
7	7.12	4,841	0
8	8.96	3,362	0
9	8.91	1,703	0
10	8.66	3,463	0
11	8.47	2,798	0
12	8.37	4,454	0
13	8.11	5,202	0
14	7.80	4,338	0
15	7.96	1,176	0
16	8.00	135	0
17	8.00	881	0
18	8.07	737	0
19	8.11	18	0
20	8.14	795	0
21	8.19	1,764	0
22	8.22	1	0
23	8.26	1	0

12/24/2016 12:01:09 AM

CHS Effluent Hourly Data

12/8/2016 12:00 AM to 12/9/2016 12:00 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	8.47	3,208	0
1	8.37	2,708	0
2	8.43	5,329	0
3	7.58	4,292	0
4	7.59	1,650	0
5	7.69	1,751	0
6	7.81	2,871	0
7	7.92	2,873	0
8	7.14	2,496	0
9	7.31	1,841	0
10	7.83	2,528	0
11	8.38	3,384	0
12	8.73	5,261	0
13	8.78	7,838	0
14	8.62	2,162	0
15	8.64	3,909	0
16	7.37	4,070	0
17	8.07	1,861	0
18	7.84	3,856	0
19	9.20	1,979	0
20	9.42	6,607	0
21	8.96	6,262	0
22	8.69	12,019	0
23	7.63	15,794	0

12/9/2016 8:28:08 AM

CHS Effluent Hourly Data

12/7/2016 12:01 AM to 12/8/2016 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	9.13	8,728	0
1	10.93	14,406	0
2	8.35	10,281	0
3	4.26	13,732	0
4	2.05	10,999	0
5	5.53	12,903	0
6	12.68	8,608	0
7	8.47	12,782	0
8	2.07	12,031	0
9	5.35	9,989	0
10	8.47	2,768	0
11	9.08	6,023	0
12	8.21	5,112	0
13	8.40	3,944	0
14	8.12	3,170	0
15	8.56	1,768	0
16	6.75	1,858	0
17	9.38	3,422	0
18	9.42	1,543	0
19	9.28	1,912	0
20	9.10	1,514	0
21	8.88	1,612	0
22	8.77	1,496	0
23	8.63	1,663	0

12/8/2016 12:01:10 AM

CHS Effluent Hourly Data

12/24/2016 12:01 AM to 12/25/2016 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	8.30	1,878	0
1	8.34	2,711	0
2	8.38	461	0
3	8.41	1,070	0
4	8.45	712	0
5	8.54	1,276	0
6	8.55	1,839	0
7	8.55	1,435	0
8	8.56	1,688	0
9	8.56	811	0
10	8.56	2,816	0
11	8.57	1,650	0
12	8.57	4,823	0
13	8.58	535	0
14	8.58	1,631	0
15	8.58	2,726	0
16	8.58	3,822	0
17	8.58	4,917	0
18	8.58	6,013	0
19	8.58	2,168	0
20	8.58	373	0
21	8.58	673	0
22	8.58	973	0
23	8.58	1,265	0

12/25/2016 12:01:05 AM

CHS Effluent Hourly Data

12/25/2016 12:01 AM to 12/26/2016 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	8.58	770	0
1	8.58	1,447	0
2	8.57	2,117	0
3	8.57	2,133	0
4	8.57	1,071	0
5	8.57	2,069	0
6	8.57	3,067	0
7	8.57	2,700	0
8	8.56	271	0
9	8.56	525	0
10	8.56	779	0
11	8.56	1,528	0
12	8.56	17	0
13	8.55	51	0
14	8.55	85	0
15	8.54	1,277	0
16	8.54	151	0
17	8.53	335	0
18	8.52	519	0
19	8.52	1,590	0
20	8.52	182	0
21	8.52	414	0
22	8.53	645	0
23	8.55	1,396	0

12/26/2016 12:01:14 AM

CHS Effluent Hourly Data

12/6/2016 12:01 AM to 12/7/2016 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	5.18	12,918	0
1	5.08	12,670	0
2	3.65	8,963	0
3	5.33	12,990	0
4	4.07	10,720	0
5	5.41	11,548	0
6	5.89	16,116	0
7	5.92	15,423	0
8	5.36	10,828	0
9	4.96	5,949	0
10	4.98	14,303	0
11	4.93	13,327	0
12	7.59	14,145	0
13	5.80	19,049	0
14	5.87	16,465	0
15	6.56	14,823	0
16	7.27	12,549	0
17	6.02	6,435	0
18	6.07	10,351	0
19	5.99	16,044	0
20	6.44	19,678	0
21	9.26	12,888	0
22	8.12	12,479	0
23	7.94	9,634	0

12/7/2016 12:01:09 AM

CHS Effluent Hourly Data

12/5/2016 12:01 AM to 12/6/2016 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	6.88	3,966	0
1	6.35	12,948	0
2	4.91	13,824	0
3	5.88	15,095	0
4	5.66	17,300	0
5	5.35	12,230	0
6	6.13	11,960	0
7	6.60	14,258	0
8	6.06	15,023	0
9	6.13	10,646	0
10	5.62	14,508	0
11	5.76	13,132	0
12	5.11	10,752	0
13	4.79	8,799	0
14	2.64	8,770	0
15	5.67	9,279	0
16	3.66	7,380	0
17	4.58	7,889	0
18	7.44	9,407	0
19	4.68	10,706	0
20	5.40	8,981	0
21	4.61	8,952	0
22	5.20	10,134	0
23	3.89	11,968	0

12/6/2016 12:01:06 AM

CHS Effluent Hourly Data

12/26/2016 12:01 AM to 12/27/2016 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	8.55	414	0
1	8.55	1,128	0
2	8.56	1,841	0
3	8.57	3,253	0
4	8.58	926	0
5	8.58	2,759	0
6	8.59	4,591	0
7	8.60	6,424	0
8	8.61	1,553	0
9	8.52	3,192	0
10	8.69	1,556	0
11	8.81	1,097	0
12	8.80	809	0
13	8.09	4,962	0
14	6.93	3,747	0
15	7.06	2,039	0
16	6.85	380	0
17	9.35	341	0
18	9.57	1,358	0
19	9.47	2,554	0
20	9.40	11	0
21	9.43	12	0
22	9.42	2	0
23	9.40	1,071	0

12/27/2016 12:01:13 AM

CHS Effluent Hourly Data

12/27/2016 12:01 AM to 12/28/2016 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	9.34	(7)	0
1	9.40	(1)	0
2	9.32	1,076	0
3	9.28	(7)	0
4	9.25	(10)	0
5	9.24	1,022	0
6	9.18	7	0
7	9.46	0	0
8	9.09	1,444	0
9	9.02	871	0
10	8.95	1,260	0
11	8.89	(9)	0.02
12	8.87	841	0
13	8.85	1,084	0
14	8.90	1,413	0
15	8.85	800	0
16	8.82	1,170	0
17	8.82	928	0
18	8.81	781	0
19	8.80	829	0
20	8.79	1,069	0
21	8.79	2	0
22	8.78	842	0
23	8.83	3,223	0

12/28/2016 12:01:08 AM

CHS Effluent Hourly Data

12/4/2016 12:01 AM to 12/5/2016 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	8.60	4,800	0
1	7.65	13,470	0
2	5.67	13,036	0
3	6.81	9,857	0
4	8.85	17,711	0
5	9.18	17,922	1.03
6	9.54	8,699	0
7	8.62	7,477	0
8	8.93	14,772	0
9	5.15	8,350	0
10	8.78	7,107	0
11	8.35	12,263	0
12	8.00	8,872	0
13	7.81	8,215	0
14	5.04	4,340	0
15	3.58	2,217	0
16	3.89	6,255	0
17	6.40	19,255	0
18	6.87	20,505	0
19	6.98	19,087	0
20	7.37	9,002	0
21	7.26	8,933	0
22	6.08	15,172	0
23	6.39	5,134	0

First deviation

12/5/2016 12:01:13 AM

CHS Effluent Hourly Data

12/3/2016 12:01 AM to 12/4/2016 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	6.35	124	0
1	2.54	904	0
2	5.38	1,129	0
3	4.60	935	0
4	6.72	1,302	0
5	6.21	123	0
6	2.76	1,152	0
7	4.11	1,204	0
8	3.19	1,164	0
9	2.88	1,577	0
10	6.68	5,439	0
11	7.09	4,576	0
12	7.40	2,079	0
13	7.98	1,642	0
14	7.99	1,481	0
15	8.01	3,213	0
16	8.05	1,353	0
17	8.21	1,348	0
18	8.30	1,471	0
19	8.42	1,423	0
20	8.55	2,875	0
21	8.53	1,272	0
22	8.49	1,392	0
23	8.47	1,584	0

12/4/2016 12:01:08 AM

CHS Effluent Hourly Data

12/28/2016 12:01 AM to 12/29/2016 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	8.89	15	0
1	8.94	9	0
2	8.97	1,443	0
3	9.03	903	0
4	9.06	7	0
5	9.05	1,173	13.28
6	9.06	774	0
7	9.46	10	0
8	9.45	24	0
9	9.44	1,839	0
10	8.86	5,658	0
11	6.78	1,020	0
12	6.76	2,731	0
13	6.70	4,441	0
14	6.21	6,152	0
15	6.08	4,130	0
16	6.63	2,821	0
17	6.22	476	0
18	6.25	1,168	0
19	6.38	1,861	0
20	6.45	2,553	0
21	6.48	1,390	0
22	6.59	1	0
23	6.68	1	0

260 G

12/29/2016 12:01:14 AM

CHS Effluent Hourly Data

12/29/2016 12:01 AM to 12/30/2016 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	6.77	360	0
1	6.78	1,512	0
2	6.87	1,503	0
3	6.99	2,156	0
4	7.25	855	0
5	7.28	1,628	0
6	7.37	2,402	0
7	7.32	3,776	0
8	7.27	927	0
9	7.60	2,604	0
10	7.74	4,571	0
11	8.16	1,508	0
12	8.45	1,336	0
13	8.15	2,996	0
14	8.19	962	0
15	8.23	1,911	0
16	8.26	2,859	0
17	8.26	3,808	0
18	8.26	3,910	0
19	8.25	706	0
20	8.25	1,618	0
21	8.24	2,529	0
22	8.24	791	0
23	8.23	1	0

12/30/2016 12:01:03 AM

CHS Effluent Hourly Data

12/2/2016 12:01 AM to 12/3/2016 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	8.04	1,699	0
1	8.02	1,553	0
2	8.00	1,518	0
3	7.98	1,246	0
4	7.96	1,283	0
5	7.95	1,531	0
6	7.95	1,776	0
7	7.95	109	0
8	7.95	1,148	0
9	7.99	1,318	0
10	8.28	1,325	0
11	7.86	1,216	0
12	6.96	1,124	0
13	5.82	76	0
14	2.04	20	0
15	7.30	4,174	0
16	6.97	1,198	0
17	6.59	108	0
18	7.14	1,002	0
19	4.04	1,019	0
20	6.99	114	0
21	6.49	1,079	0
22	5.29	1,165	0
23	7.55	1,063	0

12/3/2016 12:01:06 AM

CHS Effluent Hourly Data

12/1/2016 12:01 AM to 12/2/2016 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	8.12	1,246	0
1	8.19	118	0
2	8.22	1,211	0
3	8.18	1,507	0
4	8.15	1,314	0
5	8.11	1,343	0
6	8.08	1,389	0
7	8.05	190	0
8	8.04	1,190	0
9	8.02	1,282	0
10	8.02	1,463	0
11	8.02	1,361	0
12	8.02	1,263	0
13	8.02	1,609	0
14	8.02	1,261	0
15	8.02	1,201	0
16	8.04	1,229	0
17	8.14	1,204	0
18	8.13	1,102	0
19	8.13	243	0
20	8.12	1,275	0
21	8.10	1,312	0
22	8.08	1,229	0
23	8.05	1,327	0

12/2/2016 12:01:26 AM

CHS Effluent Hourly Data

12/30/2016 12:01 AM to 12/31/2016 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	8.20	1,428	0
1	8.16	2,046	0
2	8.12	2,645	0
3	8.09	1,893	0
4	8.03	104	0
5	8.03	210	0
6	8.06	1,072	0
7	8.15	575	0
8	8.13	1,551	0
9	8.25	2,526	0
10	8.22	2,287	0.17
11	8.18	(14)	0
12	8.18	(14)	0
13	8.18	(14)	0
14	8.18	(14)	0
15	8.18	(14)	0
16	8.18	(14)	0
17	8.18	(14)	0
18	8.18	(14)	0
19	8.18	(14)	0
20	8.18	(14)	0
21	8.18	(14)	0
22	8.18	(14)	0
23	8.18	(14)	0

12/31/2016 12:01:00 AM

CHS Effluent Hourly Data

12/31/2016 12:01 AM to 1/1/2017 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	8.18	(14)	0
1	8.18	(14)	0
2	8.18	(14)	0
3	8.18	(14)	0
4	8.18	(14)	0
5	8.18	(14)	0
6	8.18	(14)	0
7	8.18	(14)	0
8	8.18	(14)	0
9	8.18	(14)	0
10	8.18	(14)	0
11	8.18	(14)	0
12	8.18	(14)	0
13	8.18	(14)	0
14	8.18	(14)	0
15	8.18	(14)	0
16	8.18	(14)	0
17	8.18	(14)	0
18	8.18	(14)	0
19	8.18	(14)	0
20	8.18	(14)	0
21	8.18	(14)	0
22	8.18	(14)	0
23	8.18	(14)	0

1/1/2017 12:01:11 AM

CHS Effluent Hourly Data

11/30/2016 12:01 AM to 12/1/2016 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	8.53	359	0
1	8.51	1,202	0
2	8.40	1,404	0
3	8.28	1,249	0
4	8.16	1,604	0
5	8.10	738	0
6	8.18	2,602	0
7	8.44	707	0
8	8.43	537	0
9	8.35	1,193	0
10	8.27	1,225	0
11	8.11	1,213	0
12	8.02	1,174	0
13	7.92	1,143	0
14	7.87	85	0
15	7.84	1,203	0
16	7.84	1,227	0
17	7.83	1,227	0
18	7.83	1,235	0
19	7.82	1,250	0
20	7.82	1,251	0
21	7.81	1,175	0
22	7.81	1,103	0
23	7.89	1,358	0

12/1/2016 12:01:25 AM

CHS Effluent Hourly Data

1/6/2017 12:00 AM to 1/7/2017 12:00 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	5.88	17,617	0
1	5.84	19,870	0
2	5.89	20,053	0
3	5.79	19,471	0
4	6.03	19,910	0
5	6.26	20,559	0
6	6.10	19,242	0
7	5.75	15,002	0
8	5.76	19,292	0
9	5.97	18,565	0
10	5.74	19,068	0
11	5.81	18,407	0
12	5.85	17,316	0
13	5.83	17,232	0
14	5.93	19,246	0
15	5.75	19,296	0
16	5.79	19,900	0
17	5.99	20,737	0
18	6.25	19,945	0
19	5.71	16,568	0
20	5.70	17,639	0
21	5.81	17,907	0
22	5.80	19,422	0
23	5.88	19,394	0

1/7/2017 12:38:05 PM

CHS Effluent Hourly Data

1/7/2017 12:01 AM to 1/8/2017 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	5.85	20,059	0
1	5.74	19,467	0
2	5.77	16,152	0
3	6.02	18,289	0
4	6.93	29,350	1.85
5	7.99	27,885	3.6
6	8.77	11,877	0
7	8.87	18,673	0
8	8.71	17,653	0
9	8.92	18,633	0
10	10.41	19,901	0
11	8.94	18,135	0
12	8.74	17,786	0
13	9.31	9,037	0
14	8.59	11,647	0
15	8.74	19,190	0
16	8.60	14,531	0
17	8.82	7,137	0
18	8.27	4,259	0
19	7.43	5,333	0
20	9.94	5,643	0
21	8.71	4,456	0
22	7.44	5,083	0
23	8.74	6,541	0

905 G
1673 G

1/8/2017 12:01:08 AM

CHS Effluent Hourly Data

1/8/2017 12:01 AM to 1/9/2017 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	8.34	4,933	0
1	8.68	3,920	0
2	8.96	3,679	0
3	8.37	2,041	0
4	8.86	4,749	0
5	7.51	4,613	0
6	9.42	1,714	0
7	9.05	2,046	0
8	8.46	2,050	0
9	9.50	2,948	0
10	9.39	3,869	0
11	9.27	2,071	0
12	9.22	3,007	0
13	9.11	1,928	0
14	9.02	2,350	0
15	8.60	5,543	0
16	7.98	7,191	0
17	7.96	2,285	0
18	7.97	2,814	0
19	8.09	1,925	0
20	8.20	3,261	0
21	8.32	3,199	0
22	8.43	3,707	0
23	8.62	2,046	0

1/9/2017 12:01:16 AM

CHS Effluent Hourly Data

1/5/2017 12:01 AM to 1/6/2017 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	5.72	17,862	0
1	5.88	19,781	0
2	5.71	20,611	0
3	5.83	18,125	0
4	5.75	18,631	0
5	5.81	22,426	0
6	5.92	25,496	0
7	5.77	20,697	0
8	5.76	19,815	0
9	5.84	19,744	0
10	5.89	19,600	0
11	5.78	20,489	0
12	5.91	19,785	0
13	5.80	17,095	0
14	5.80	19,126	0
15	5.79	18,095	0
16	5.86	20,338	0
17	6.14	20,145	0
18	6.01	16,643	0
19	5.80	19,459	0
20	5.70	18,282	0
21	5.71	17,323	0
22	5.79	18,294	0
23	5.68	18,360	0

1/6/2017 12:01:05 AM

CHS Effluent Hourly Data

1/4/2017 12:01 AM to 1/5/2017 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	5.75	16,232	0
1	5.93	16,960	0
2	5.87	15,810	0
3	5.81	14,727	0
4	5.74	14,796	0
5	5.85	15,494	0
6	5.80	15,432	0
7	5.95	14,774	0
8	6.00	15,304	0
9	6.27	16,349	0
10	5.85	16,592	0
11	5.82	14,358	0
12	5.85	17,261	0
13	5.88	17,864	0
14	5.87	14,635	0
15	5.73	16,748	0
16	5.89	17,372	0
17	5.88	13,976	0
18	5.94	14,871	0
19	5.68	13,199	0
20	5.77	16,032	0
21	5.86	18,635	0
22	6.18	16,971	0
23	5.73	15,670	0

1/5/2017 12:01:12 AM

CHS Effluent Hourly Data

1/9/2017 12:01 AM to 1/10/2017 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	8.72	3,859	0
1	9.01	3,287	0
2	9.01	2,999	0
3	9.00	3,308	0
4	9.00	3,907	0
5	9.00	2,420	0
6	9.00	2,677	0
7	8.97	2,623	0
8	8.83	3,258	0
9	8.77	1,923	0
10	8.93	3,670	0
11	8.97	3,359	0
12	8.92	2,713	0
13	8.88	2,448	0
14	8.85	2,350	0
15	8.78	6,337	0
16	8.22	17,630	0
17	7.88	18,978	0
18	8.01	5,969	0
19	7.91	4,009	0
20	7.84	5,219	0
21	7.53	17,529	0
22	7.24	11,353	0
23	6.55	8,972	0

1/10/2017 12:01:09 AM

CHS Effluent Hourly Data

1/10/2017 12:01 AM to 1/11/2017 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	5.87	15,062	0
1	5.89	17,324	0
2	5.85	17,530	0
3	5.70	16,940	0
4	5.74	16,914	0
5	5.85	19,416	0
6	5.79	17,080	0
7	5.71	13,264	0
8	5.75	12,494	0
9	5.87	9,815	0
10	6.15	15,760	0
11	5.80	15,646	0
12	5.95	18,897	0
13	5.76	18,210	0
14	5.84	16,198	0
15	5.93	19,175	0
16	6.08	23,172	0
17	5.83	20,399	0
18	5.83	19,677	0
19	5.70	17,476	0
20	5.79	19,752	0
21	5.77	20,309	0
22	6.07	19,115	0
23	5.81	15,364	0

1/11/2017 12:01:05 AM

CHS Effluent Hourly Data

1/3/2017 12:01 AM to 1/4/2017 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	7.94	5,303	0
1	8.54	11,004	0
2	9.02	9,863	0
3	8.51	8,914	0
4	8.44	6,348	0
5	8.26	4,830	0
6	7.97	5,911	0
7	8.03	7,433	0
8	9.53	2,307	0.8
9	9.86	1,730	0
10	10.03	1,690	0
11	9.49	11,467	0
12	7.45	18,068	0
13	7.09	19,368	0
14	7.43	11,289	0
15	7.61	5,714	0
16	7.26	13,033	0
17	6.36	19,255	0
18	5.70	11,694	0
19	5.77	14,521	0
20	5.91	14,949	0
21	5.92	17,160	0
22	5.84	18,371	0
23	5.94	16,578	0

1/4/2017 12:01:05 AM

CHS Effluent Hourly Data

1/2/2017 12:01 AM to 1/3/2017 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	7.35	(12)	0
1	7.35	(12)	0
2	7.34	(12)	0
3	7.33	(12)	0
4	7.31	(12)	0
5	7.30	(12)	0
6	7.29	(12)	0
7	7.27	(12)	0
8	7.26	(12)	0
9	7.25	(12)	0
10	7.23	(12)	12.68
11	7.36	(12)	60
12	7.98	7,782	2.5
13	8.07	1,254	0.02
14	8.14	79	0
15	8.17	1,365	0
16	8.56	2,893	0
17	9.46	14,288	0
18	9.04	12,999	0
19	9.33	15,355	0
20	9.69	17,649	0
21	8.15	11,324	0
22	8.84	11,243	0
23	8.30	5,076	0

1/3/2017 12:01:15 AM

CHS Effluent Hourly Data

1/11/2017 12:01 AM to 1/12/2017 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	5.77	19,376	0
1	5.84	17,819	0
2	5.91	16,640	0
3	5.89	18,447	0
4	5.80	17,000	0
5	5.78	15,726	0
6	5.67	18,047	0
7	5.79	19,846	0
8	5.76	18,683	0
9	6.18	20,370	0
10	5.77	20,539	0
11	5.70	18,580	0
12	5.79	14,542	0
13	5.78	16,023	0
14	5.73	17,562	0
15	5.92	17,385	0
16	5.72	19,253	0
17	5.71	19,197	0
18	5.75	18,306	0
19	5.82	16,045	0
20	5.81	13,778	0
21	5.81	19,585	0
22	5.93	21,108	0
23	5.79	23,766	0

1/12/2017 12:01:04 AM

CHS Effluent Hourly Data

1/12/2017 12:00 AM to 1/13/2017 12:00 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	5.81	21,509	0
1	5.83	21,155	0
2	5.78	19,636	0
3	5.88	17,858	0
4	5.83	19,171	0
5	5.83	19,653	0
6	5.80	20,196	0
7	5.78	21,016	0
8	5.99	15,337	0
9	6.31	17,268	0
10	7.06	11,633	0
11	6.12	17,538	0
12	5.81	20,462	0
13	5.87	21,346	0
14	5.76	20,470	0
15	6.17	17,236	0
16	5.82	20,570	0
17	5.79	18,339	0
18	5.81	18,936	0
19	5.76	19,278	0
20	5.76	19,647	0
21	5.79	20,097	0
22	5.79	20,452	0
23	5.77	19,699	0

1/13/2017 6:38:02 AM

CHS Effluent Hourly Data

1/1/2017 12:01 AM to 1/2/2017 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	8.18	(14)	0
1	8.18	(14)	0
2	8.18	(14)	0
3	8.18	(14)	0
4	8.18	(14)	0
5	8.18	(14)	0
6	8.18	(14)	0
7	8.18	(14)	0
8	8.18	(14)	0
9	8.18	(14)	0
10	8.18	(14)	0
11	8.18	(14)	0
12	8.18	(14)	0
13	8.18	(14)	0
14	8.18	(14)	0
15	8.18	(14)	0
16	8.18	(14)	0
17	8.18	(14)	0
18	8.18	(14)	0
19	8.18	(14)	0
20	8.18	(14)	0
21	8.18	(14)	0
22	8.18	(14)	0
23	8.18	(14)	0

1/2/2017 12:01:03 AM

Green, Pete

From: Scan2Email <Scan.2Email@chsinc.com>
Sent: Saturday, January 28, 2017 12:06 AM
To: Weinmann, David; Petersen, Robert; Cook, Stanley; Yates, Wes
Cc: Emrich, Chuck; Oehler, Christopher; MacClure, Jeremy; Mendes, Christopher; Duncan, Scott
Subject: Effluent Hourly Data was executed at 1/28/2017 12:01:07 AM
Attachments: Effluent Hourly Data.pdf

CHS Effluent Hourly Data

1/27/2017 12:01 AM to 1/28/2017 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	9.17	1,049	0
1	9.15	1,950	0
2	9.12	5,717	0
3	9.03	2,218	0
4	8.88	135	0
5	8.79	297	0
6	8.70	458	0
7	8.60	619	0
8	8.56	23	0
9	8.49	51	0
10	8.45	95	0
11	8.66	138	0
12	8.69	182	0
13	8.69	226	0
14	8.68	269	0
15	8.68	313	0
16	8.68	357	0
17	5.36	400	0
18	6.34	2,328	0
19	6.28	(14)	0
20	6.25	(14)	0
21	6.22	(14)	0
22	6.19	(14)	0
23	6.16	(14)	0

1/28/2017 12:01:08 AM

Green, Pete

From: Scan2Email <Scan.2Email@chsinc.com>
Sent: Sunday, January 29, 2017 12:06 AM
To: Weinmann, David; Petersen, Robert; Cook, Stanley; Yates, Wes
Cc: Emrich, Chuck; Oehler, Christopher; MacClure, Jeremy; Mendes, Christopher; Duncan, Scott
Subject: Effluent Hourly Data was executed at 1/29/2017 12:01:08 AM
Attachments: Effluent Hourly Data.pdf

CHS Effluent Hourly Data

1/28/2017 12:01 AM to 1/29/2017 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	6.20	1,389	0
1	6.13	723	0
2	6.20	1,356	0
3	6.28	1,989	0
4	6.36	2,622	0
5	6.54	2,922	0
6	6.83	103	0
7	7.14	1,672	0
8	7.54	2,095	0
9	7.80	10	0
10	8.10	1,548	0
11	8.17	1,482	0
12	8.21	824	0
13	8.24	1,646	0
14	8.30	2,764	0
15	8.44	752	0
16	8.50	1,661	0
17	8.59	3,399	0
18	8.71	239	0
19	8.77	737	0
20	8.79	1,234	0
21	8.79	2,152	0
22	8.79	(14)	0
23	8.78	(14)	0

1/29/2017 12:01:08 AM

Green, Pete

From: Scan2Email <Scan.2Email@chsinc.com>
Sent: Monday, January 30, 2017 12:06 AM
To: Weinmann, David; Petersen, Robert; Cook, Stanley; Yates, Wes
Cc: Emrich, Chuck; Oehler, Christopher; MacClure, Jeremy; Mendes, Christopher; Duncan, Scott
Subject: Effluent Hourly Data was executed at 1/30/2017 12:01:07 AM
Attachments: Effluent Hourly Data.pdf

CHS Effluent Hourly Data

1/29/2017 12:01 AM to 1/30/2017 12:01 AM

Hour	Average Hourly pH	Total Hourly Flow (Gal)	Minutes Bypassed to City
0	10.08	889	0
1	8.67	1,511	0
2	8.62	308	0
3	8.57	827	0
4	8.50	4,113	0
5	7.98	5,841	0
6	7.59	3,030	0
7	8.70	5,888	0
8	8.98	10,818	0
9	8.56	13,310	0
10	8.58	12,647	0
11	11.36	12,792	0
12	12.02	11,641	0
13	11.25	8,740	0
14	11.96	10,959	0
15	11.92	11,554	0
16	12.05	6,327	0
17	12.33	7,821	0
18	12.27	4,623	0
19	12.56	4,689	0
20	12.29	9,328	0
21	12.26	6,177	0
22	12.38	3,811	0
23	12.51	5,181	0

1/30/2017 12:01:08 AM